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Balliol College, Oxford; New Buildings. Mr. E. P. Warren, F.R.I.B.A., Architect.

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The Royal Commission on Sewage-disposal.

"It is practicable to purify the sewage of towns to any degree required, either by land treatment or by artificial filters, and there is no essential difference between the two processes."

THIS is the important "conclusion" to which the Commissioners appointed ten years ago "to inquire and report what methods of treating and disposing of sewage . . . may properly be adopted" have been led. It is a conclusion at which many independent engineers, chemists, and bacteriologists had arrived before the Commission was appointed, but the conservatism of the Local Government Board, based on the Reports of earlier Commissions, stood in the way of its practical application. Land-treatment of some kind or other was the official addition to every inland scheme for purifying sewage by means of artificial contact-beds or filters. During the existence of the Commission the official requirements have, indeed, been modified from time to time, but the broad fact remains that the long-continued insistence on some kind of land-treatment has been a spoke in the wheel of progress. Sanitary authorities, unable to obtain suitable land at a moderate price, were content to mark time, or took refuge in experiments, rather than incur an expenditure which they and their advisers regarded as unreasonable. In their Fifth Report (just issued) the Commissioners state that one of their first steps was to seek examples of the newer methods of sewage purification, "but in no case was the whole of the sewage of a town being dealt with . . . and the number of places in which experiments on anything approaching a practical scale were being carried out was very limited." They therefore decided to postpone experimental investigation into the merits of these newer methods of sewage treatment "until the field for observation was more extended." Whether a hint from the Commissioners had anything to do with the matter or not, we cannot say, but in any case the more extended field for observation was in due course obtained, and the result is the memorable conclusion quoted above.

The labours of the Commission are not yet ended. Another Report dealing with the various methods available for the purification of trade-effluents when not mixed with sewage is promised, but as far as town-sewage is concerned the Report under review is for all practical purposes conclusive. It is a document of the greatest importance, and will have far-reaching consequences. In connexion with it separate volumes are issued as appendices containing the evidence of witnesses, a summary of the evidence and reports on the observations of artificial processes and on special investigations into various branches of the subject, but with these appendices we are not at present concerned. The Report itself is more than enough for a single article. It is a blue-book of 238 pages, and is divided into eight parts as follows:—

i. Preliminary Treatment of Sewage (36 pp.).

ii. Purification of Sewage by Artificial Filters (90 pp.).

iii. Purification of Sewage by Treatment on Land (22 pp.).

iv. Sludge (33 pp.).

v. General (25 pp.).

vi. Standards and Tests (8 pp.).

vii. Pollution of Estuaries and Tidal Waters (1 p.).

viii. Summary of Conclusions and Recommendations (13 pp.).

The parts are of varying length and importance, and it will be necessary for us to consider mainly those which are the most practical and the most generally interesting to engineers and surveyors. The "Introductory Remarks" printed at the beginning of Part I. are really introductory to the Report as a whole. After a definition of sewage and of the objects to be aimed at in its purification, we find the following guarded reference to the purifying agency:—

"There is a considerable amount of evidence to show that the oxidation of the organic matter during its passage through filters or land is chiefly a biological process, but as to the exact nature of the action which takes place very little is known."

This is but another way of saying that the Roman dictum that all things end in mystery is still true. Life is elusive, but some of its effects can be predicated with sufficient accuracy for practical purposes. Not more definite is the statement that certain experiments made by Dr. Houston "seem to suggest that the presence of such non-sporing bacteria as B. coli, B. proteus, etc., are not *essential* to purification, and that the work may be performed by other micro-organisms." The Commissioners point out that, although a filter may contain initially an enormous number of B. coli, this microbe rapidly disappears from the effluent if the liquid passing on to the filter is free from these organisms, but that the filter may still be able to support the life of many other bacteria.

"It is therefore to be inferred that sewage-filters, when working properly, are not likely to provide suitable breeding grounds for pathogenic bacteria, although they allow a certain number of such bacteria to pass through them."

Finally, the Commissioners admit that they can comply only in general terms with the terms of reference which directed them to state "by what rules, in relation to the nature or volume of sewage or the population to be served or other varying circumstances or requirements, should the particular method of treatment and disposal to be adopted be determined."

"The circumstances of different places are of endless variety, and there are many varieties of treatment, any one of which will be successful, if properly carried out. The main question to be determined in each case is which of these methods will be cheapest, having regard to the local circumstances."

At the first glance this may seem to be a lame conclusion to arrive at after ten

years' work—a mountain in labour bringing forth a mouse—but it is the official recognition of the utility of the newer methods of sewage-purification, and by relegating to the waste-paper basket the stereotyped demand for land-treatment will do much to give these newer methods a fair trial, and so extend the field of observation which the Commissioners found so restricted ten years ago.

Methods of Treatment of Sewage.

I.—Of the various methods of measuring the strength of sewage the Commissioners think the dissolved-oxygen test the best; that is to say, the strength of the sewage is measured by the amount of dissolved oxygen taken up during the complete, or practically complete, oxidation of the organic and ammoniacal matter in it. Dr. Adeney's apparatus is favourably noticed in this connexion. From experiments made at Accrington on the question of strength of sewage as affecting purification, the inference is drawn that, "within ordinary limits of concentration and volumes treated, it is the amount and nature of the organic impurity present which mainly determine in practice the ease or difficulty of purification; in other words, that within practical limits mere dilution does not affect the size of the filtering plant which is necessary." Whether the organic matters are to be oxidised on land or in filters, it is generally more economical to remove from the sewage by a preliminary process a considerable proportion of the grit and suspended matter. The use of fine screens is not recommended, but coarse screens for removing the grosser suspended solids, such as sticks, cloths, paper, corks, etc., are almost essential when the sewage has to be pumped, and in other cases are "usually considered an advantage." Grit or detritus tanks are in most circumstances desirable, particularly where the sewage is to be treated in septic tanks which will only be cleaned out at long intervals of time. The next step is usually some form of tank-treatment for the removal of a large proportion of the suspended solids. Sedimentation-tanks of two kinds are in use; in the one case, quiescent settlement is allowed for a period varying according to the composition of the sewage, and in the other, the flow of sewage is continuous. To maintain tanks of the former kind in a highly efficient condition the deposits "must be removed after every first or second filling." For continuous-flow tanks to be followed by filtration through fine material "the period of flow should be from ten to fifteen hours, and . . . the tanks should be cleaned out at least once a week." Tanks of both kinds are more advantageously used in parallel than in series.

The third method of tank-treatment is by means of septic tanks, and to this method the Commissioners have devoted a good deal of attention. They find that the advantages claimed for the septic tank were originally overstated. In the first place, it does not solve the sludge difficulty, as considerably less than one-half of the organic solid matter is digested in the tank. The figures quoted range from 10 per cent. to 38 per cent.; the Commissioners' own observations, extending over two years, showed the digestion at Exeter to be about 25 per cent., and at Ilford about 30 per cent. Secondly, as to the destruction of pathogenic organisms, the Commissioners find that "the sewage issuing from septic tanks is bacteriologically almost as impure as the sewage entering the tanks." As to the third claim that sewage which had passed through a septic tank was more easily oxidised than sewage which had passed through simple sedimentation-tanks, either with or without chemical precipitation, the evidence was so conflicting that special experiments were undertaken for the purpose of arriving at a definite decision. Three identical percolating filters were constructed at Dorking, one of which was fed with settled sewage, one with sewage which had been subjected to chemical precipitation, and the third in septic-tank liquor. These experiments were carried on for over a year, and "conclusively proved that in the case of an ordinary domestic sewage such as that at Dorking, septic-tank liquor is not more easily oxidised on its passage through filters than the other liquids." The Commissioners, however, think that "in certain circumstances" septic-tank treatment "as a preliminary process is efficient and economical." Various details of construction and working are discussed. It is said that no definite rule can be laid down as to how long a septic tank should be run without cleaning, but "it must be left to the manager of each works to see that the suspended solids issuing from the tank do not increase to such an extent as to have an injurious effect upon the filters or upon the quality of the filtrate." Again, it is not considered advisable to remove *all* the sludge from septic tanks when these are cleaned out. As to the rate of flow through the tank the Commissioners merely echo what has been the general opinion of engineers for some years, "that at few places should the sewage remain more than twenty-four or less than twelve hours in a septic tank." At least two tanks should be provided, and as far as digestion of sludge and quality of tank-liquor are concerned, it is immaterial whether the tanks are closed or open, but where it is important to avoid nuisance from smell "the closed tank is generally preferable."

Arrangements for removing suspended solids from septic-tank liquor before it is delivered to the filters are briefly noticed, such as the "roughing filters" of different kinds in use at Salford, Wimbledon, and Friern Barnet, and the experimental precipitation-tanks at Dorking.

The Commissioners do not regard the chemical precipitation of sewage as an obsolete form of preliminary treatment, but believe it to be "almost essential" in the case of some sewages containing trade-waste. A mixture of lime and alumino-ferric appears to be the favourite precipitant, but a good word is said for the A.B.C. process in use at Kingston-on-Thames.

Comparisons of Cost.

The most interesting portion of this part of the Report is the somewhat elaborate comparison as to the cost of five methods of preliminary treatment, namely, (1) quiescent settlement with and (2) without chemicals, (3) continuous-flow settlement with and (4) without chemicals, and (5) septic-tank treatment. The annual cost, including repayment of principal and interest on loans, is estimated for a hypothetical case to range from 1*l.* 10s. 11d. per million gallons for continuous-flow settlement without chemicals to 3*l.* 8s. 11d. for quiescent settlement with chemicals. For septic-tank treatment the cost is said to be 1*l.* 14s. 6d., but this includes an undue proportion of the works-manager's salary. This, however, is a matter of little moment, as it leaves a smaller proportion to be debited to the filtration, and the total cost of purification is more important than that of the preliminary treatment only. As the amount of suspended matter in the effluents from the different tanks varies, the cubic contents of the filters must also vary. The cheaper methods of preliminary treatment require larger filters, and the final figures for complete purification are therefore less unequal than those for preliminary treatment only. The total annual cost of preliminary treatment and of filtration through coarse percolating filters is said to be, per million gallons, 4*l.* 1s. 7d. for No. 2, 4*l.* 3s. 7d. for No. 4, and 4*l.* 7s. 2d. for No. 5. The chemical precipitation adds 20 or 25 per cent. to the cost, the figures being 4*l.* 18s. 5d. for No. 3, and 5*l.* 0s. 4d. for No. 1, but in this connexion the Commissioners point out that chemically-precipitated sewage can be treated on filters of finer material, "and in that case a smaller number of cubic yards of material than . . . allowed for in this comparison would suffice for its purification." In a footnote it is said that treatment of septic-tank liquor with lime appears "to allow of a very considerable increase in the volume which may be filtered per cube yard, greater than would follow from the mere reduction in suspended solids effected by this precipitation."

For "very strong water-closet domestic sewages" chemical precipitation is recommended. For "very strong domestic sewages consisting for the most part of slop-water, there is, apart from the question of cost, little to choose between the various methods of settlement," but septic tanks would usually be the most economical at small places where labour for frequent sludging would not be available. For domestic sewages of about average strength, "the choice of the preliminary process should depend upon local circumstances and upon the kind of filters to be adopted." For a weak sewage the septic-tank process would generally be the most economical, "if land were available for the burial of the sludge."

Methods of Filtration.

II.—Contact-beds and percolating filters form the subject of Part II. of the Report, and the definite statement is hazarded that "there can be no doubt that the organic matter in solution in sewage can be oxidised by either type of filter, provided the filter is properly constructed and properly worked." It has for a long time been generally held

that the percolating filter is the better of the two, and this opinion is confirmed by the Commissioners.

"Taking into account the gradual loss of capacity of contact-beds, a cubic yard of material arranged in the form of a percolating filter will generally treat satisfactorily nearly twice as much tank-liquor as a cubic yard of material in a contact-bed. . . . Percolating filters are better adapted to variations of flow than contact-beds. The effluents from percolating filters are usually much better aerated than the effluents from contact-beds, and apart from suspended solids are of a more uniform character."

The total annual cost is also in favour of percolating filters. On the other hand, the risk of nuisance from smell is greater with percolating filters than with contact-beds, and there is also trouble from flies, especially if the filters are constructed of coarse material. It is also said that in the case of sewage containing substances which have an inhibitory effect upon the activity of micro-organisms, the working power per cubic yard of filters of the two types may be more nearly equal than stated above, but "this point . . . is not clearly established."

The most suitable depth for percolating filters is a point on which the Commissioners have obtained much useful information. Experiments had shown that if filters of different depth were treated with the same quantity of tank-effluent *per square yard*, the deepest filters gave the highest degree of purification, and consequently it was the early practice to make such filters as deep as the levels would allow. The Commissioners set themselves the task of ascertaining "whether it is better to arrange a *given quantity of material* in the form of a deep or of a shallow percolating filter." Filters of different depths were constructed and treated at equal rates *per cubic yard of material*, instead of per square yard of surface, and the results led to the following conclusion, which the Commissioners emphasise by italics:—

"*For practical purposes we think the conclusion is justified that, within somewhat wide limits of depth and given ample aeration and good distribution, the same amount of work can be got out of a cube yard of coarse material whether it is arranged in the form of a deep or of a shallow percolating filter.*"

By coarse material is meant material over 2½ in. in diameter, and for filters so constructed the limit of shallowness is given as 3 ft. If medium-sized material (say, ½ in. in diameter) is used, it is probably better to arrange it in the form of a shallow filter, as better aeration would thus be maintained, and the same is said of fine percolating filters. Great stress is laid on the length of time during which the liquid is in contact with the filtering material, the extent of the purification varying directly with the average length of time taken by the sewage-liquor to pass through the filtering material. Fine or medium-sized materials give the best effluents, so long as they are kept free from water-logging, but if there is much suspended matter in the liquid which is being filtered, such filters soon clog unless the rate of filtration is slow.

Various methods of feeding percolating filters are passed in review, and useful information is given about the most convenient area of percolating filters, their construction, and the troubles due to choking and growths. The relative cost of treatment by contact-beds and by percolating filters is discussed in a series of tables, the conclusion being that the annual cost of double contact-bed treatment is nearly twice as much as that of the other method of filtration. The relative efficiency of the two methods of purification is also considered, and in this connexion a unit of purification has been adopted which will probably be of service in the future. By deducting (1) the number of parts (by weight) of oxygen taken up by 100,000 parts of the effluent from the filter from (2) the number of parts (by weight) of oxygen taken up by 100,000 parts of the liquor going on to the filter, a figure is obtained which, when multiplied by the number of gallons of liquor passing through the filter per cubic yard in twenty-four hours, gives the number of units of purification effected by the filter. Thus, if the oxygen absorbed by 100,000 parts of the filter effluent is 5 and that absorbed by the same quantity of tank-liquor is 55, and if 200 gallons per cubic yard are passed on to the filter daily, the units of purification effected will be—

$$(55-5) \times 200 = 10{,}000.$$

The results of filtration at upwards of thirty different towns are tabulated on this basis, and special experiments at Accrington are also recorded. For details the Report must be consulted, but the Commissioners have prepared a table giving "an *approximate* idea of the purification which can be effected by different kinds of filter treating different liquors, so as to produce a fair to good effluent," and this table is worth quotation in full:—

—	Units of Purification per cube yard.
Crude or partially-settled sewage treated on double contact-beds	3,000 to 4,000
Crude or partially-settled sewage treated on percolating filters	2,500 to 3,500
Well-settled sewage treated on percolating filters	7,000 to 8,000, and probably up to 11,000
Septic-tank liquor treated on single contact-beds	3,000 to 4,500
Septic-tank liquor treated on double contact-beds	3,500 to 4,500
Septic-tank liquor treated on percolating filters	7,000 to 11,000
Precipitation-liquor treated on single contact-beds	Up to 11,000
Precipitation-liquor treated on double contact-beds	*Probably* up to 6,000 to 7,000
Precipitation-liquor treated on percolating filters:—	
(a) Filters of coarse material	Up to about 8,000
(b) Filters of fine material	Up to about 18,000

Sewage Farms.

III.—It is a well-known fact that sewage can be purified on land if the soil is suitable and the area sufficient, but it is also well known that if the conditions are unfavourable sewage-farms may be costly failures. The Commissioners carefully investigated eight sewage-farms with soils of different kinds, and compared the effluents with those obtained from artificial filters. Effluents from the most suitable land are slightly better than those from percolating filters, but "effluents from heavy land are often of very inferior quality." The cost of purifying sewage on land of three different kinds is worked out in a series of tables, the cost of the land being calculated at 100*l.* per acre. If the land is suitable for the purpose, such as sandy loam overlying gravel and sand, the estimated net cost of treating one million gallons ranges from 2*l.* 6s. 6d. to 3*l.* 11s. 10d., according to the method adopted. For heavy soil overlying clay subsoil the cost is 5*l.* 4s. 3d., and for stiff clayey soil overlying dense clay 7*l.* 4s. The cheapest method of artificial filtration—quiescent settlement followed by percolating filters—is said to cost 4*l.* 1s. 7d. per million gallons, and the cheapest method with contact-beds 5*l.* 12s. 10d. These and the other estimates already quoted were prepared for the Commissioners by their engineer, Mr. G. B. Kershaw. The Commissioners add:

"Assuming that really suitable land can be purchased at 100*l.* per acre, land treatment of sewage is probably cheaper than artificial treatment, but where the soil is not suitable, and on which only a comparatively small volume of sewage can be treated per acre, the cost of land treatment would probably be greater than most of the artificial processes. The differences in cost are, however, small, and it is evident that in deciding between the two methods regard must be had to local conditions."

Disposal of Sludge.

IV.—The disposal of sewage-sludge is one of the chief difficulties in dealing with sewage, and the Report does not throw much light on the subject. The production of "Native guano" at Kingston-on-Thames and of "Globe Fertiliser" at Glasgow is favourably noticed, but the sale of the latter is said to be diminishing. The disposal of sludge by depositing it in the sea is recommended for cities on or near the sea-board as being "in the majority of cases the cheapest process." Other methods described are the pressing of sludge, shallow burying in the soil, lagooning or air-drying, covering ploughed land with sludge, and burning. At Bradford grease is extracted from the sewage in sufficient quantities to pay for the working expenses of the tank treatment of the sewage, leaving out of account the charges in respect of principal and interest on loans. Experiments as to the manurial value of sewage-sludge are recorded, but are to be continued for another year, as "the indications are that the manurial constituents of sewage-sludge act more slowly than those of ordinary artificial manures, and for this reason the second year results may be of considerable importance."

Trade Effluents.

V.—The effect of trade effluents on sewage-purification is the first of the subjects discussed in Part V., but although such effluents almost invariably interfere with or retard the processes of purification, the Commissioners "are not aware of any case where the admixture of trade refuse makes it impracticable to purify the sewage either upon land or by means of artificial processes." This leads to the important recommendation that, as a general rule, trade effluents should be allowed to enter the sewers, subject, however, to regulation by the local authority.

The risk of nuisance from smell at

sewage-works depends not only on the character of the sewage but also on the method of treatment adopted. Some trade-wastes increase the risk and others diminish it. Septic-tank treatment is likely to be more offensive than chemical precipitation or simple sedimentation, and percolating filters more than contact-beds. The deodorisation of septic-tank liquors by means of an active chlorine solution or lime is discussed, and the conclusion is reached that "by the adoption of special precautions methods of treatment which ordinarily are accompanied by somewhat serious smell may be rendered almost inoffensive."

This part of the Report contains some useful observations on the choice of a method of sewage-treatment, and in this connexion three comprehensive charts are given showing the purification effected by all the usual methods with strong, medium, and weak sewages. The treatment of storm-water sewage is discussed, and the Commissioners recommend some important modifications of the usual requirements of the Local Government Board, including the provision of stand-by tanks for storm-water and the abolition of storm-water filters. On the vexed question of separate or combined systems of sewers, the Commissioners are of opinion that "the cases in which the provision of a separate system can properly be justified are rare," and that "it would be unwise to confer on all local authorities power to enforce the adoption of the separate system of sewerage and the provision of two sets of drains in every house." In this opinion nearly all architects will concur.

VI. and VII.—Standards and tests for sewage-effluents, and the pollution of estuaries and tidal waters, do not call for particular notice. We pass to the summary of conclusions and recommendations.

Summary.

VIII.—Some of the most important conclusions and recommendations of the Commissioners have already been given, but there are others of an administrative nature which are worthy of attention. The Commissioners are in favour of the formation of Rivers Boards throughout the country with power to settle certain differences between local authorities and manufacturers, to inspect public water-supplies, to protect tidal and other waters from pollution, etc. The constitution of a Central Authority with power over the Rivers Boards and local authorities is also recommended, this authority to be properly equipped for undertaking special investigations and for collecting and collating the work done by others. If this authority is set up and carries on its work efficiently, the need for another Royal Commission on Sewage-disposal may never arise, and the sitting Commission will not have spent its long life in vain.

VILLAGE INSTITUTE, WESTON RHYN, SALOP.—Institute premises have been opened at Weston Rhyn. The building contains reading and billiard rooms, large lecture-room, which, by means of sliding panels, may be converted into classrooms and other compartments. The architects were Messrs. Douglas & Minshall, Chester, the builder being Mr. Wm. Felton, of Oswestry. The total cost of the work was about 1,836*l*.

ENGLISH CHURCH FURNITURE.

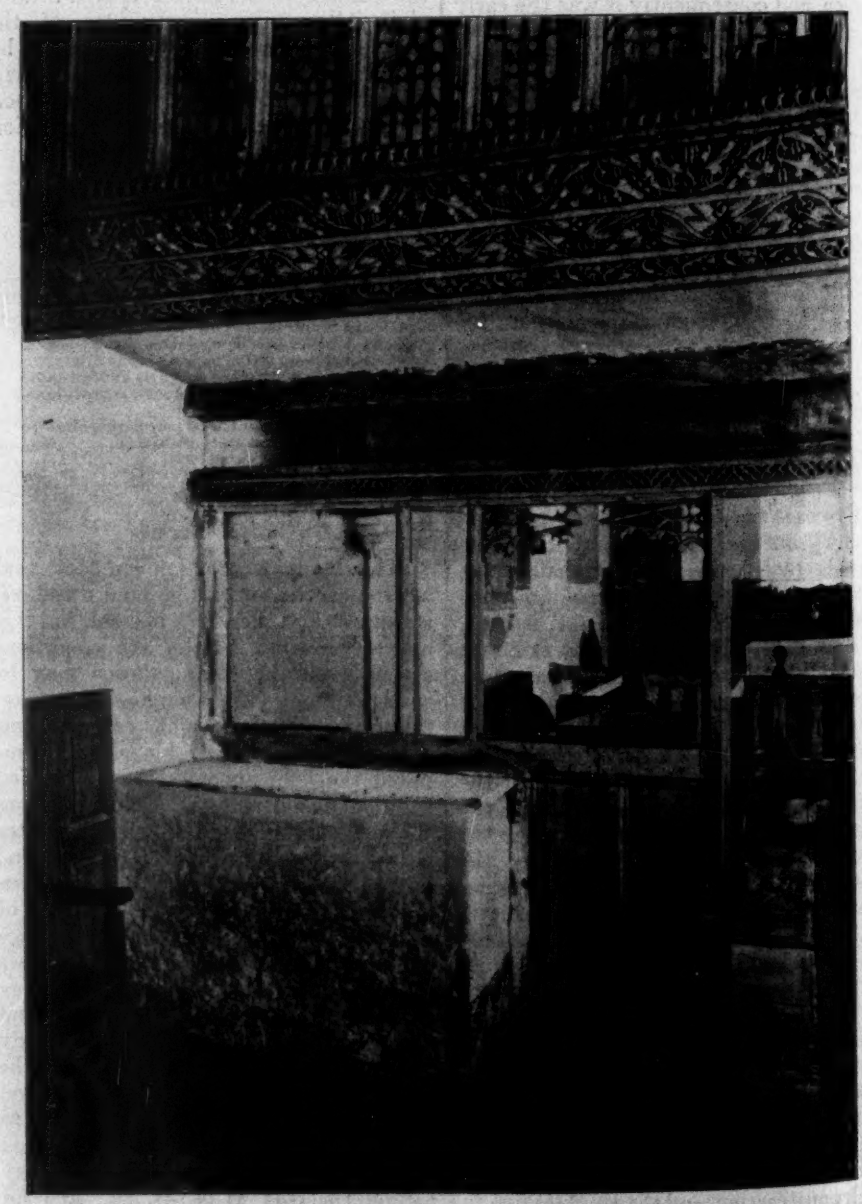
By MR. F. C. EDEN.

IN the year 1839 the Cambridge Camden Society was founded, and about that time the science to which the name ecclesiology has been given came into being. It soon attracted many enthusiastic and some profound scholars, more especially among those whose sympathies were with the contemporary religious revival; and if, in its origin, the study was mainly antiquarian, its professors were not slow to give practical expression to their newly-found principles.

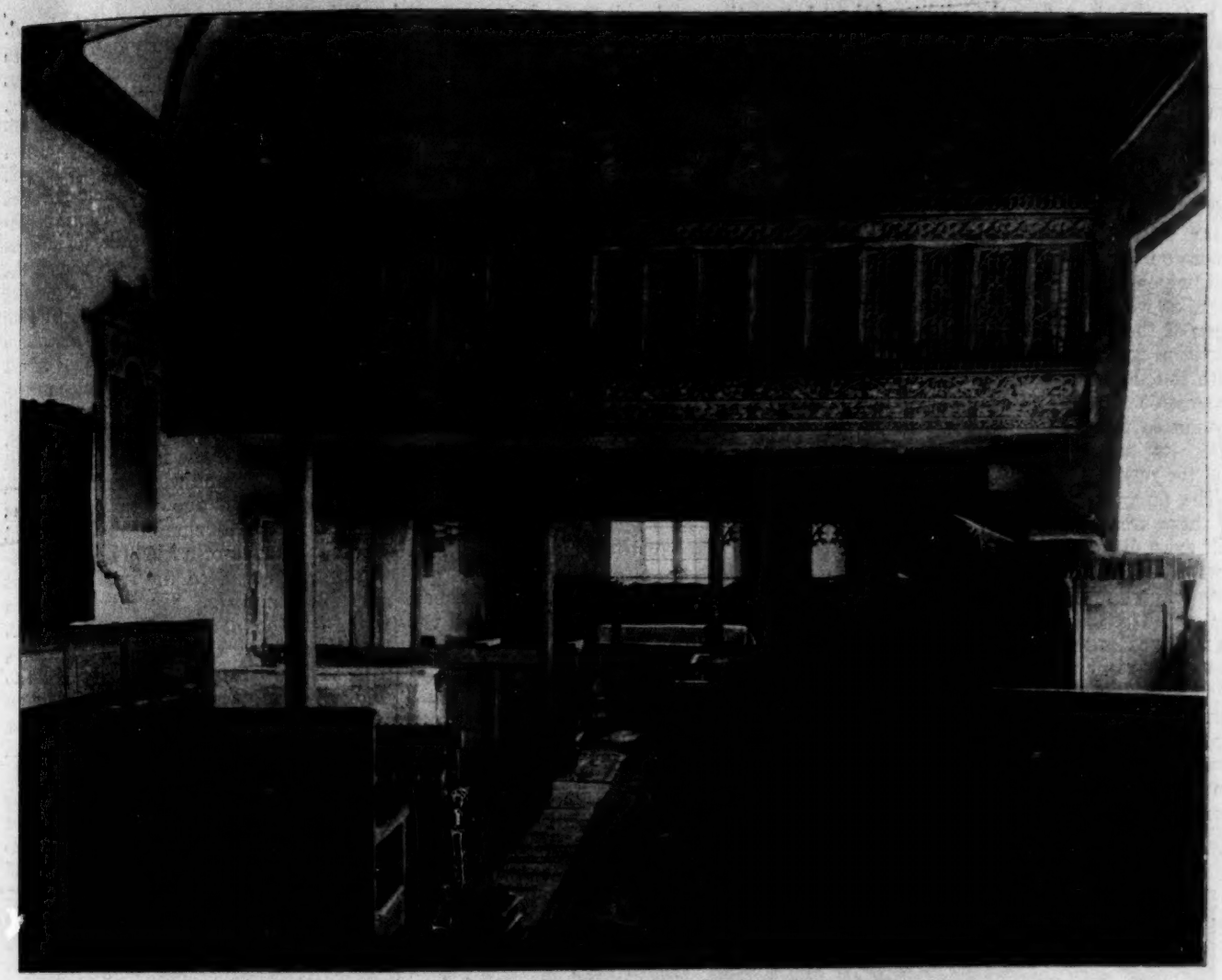
Unfortunately the work of church building and restoration to which the Oxford movement had given such impetus went on too rapidly for the information gathered by the students to be adequately sifted and assimilated. In the heyday of the Gothic revival the English correspondent of M. Didron's *Annales Archéologiques* noted with triumphant glee that at the time of writing no less than 126 ecclesiastical edifices were passing through the hands of one well-known architect. Is it surprising that when work requiring delicate handling was undertaken in this wholesale way serious blunders were common? Too impatient to leave well alone, the enthusiasm of the moment uprooted tares and wheat alike with equal and undiscriminating energy. There was much misreading of old buildings; ornaments (in the technical sense of the term) and usages that were really of respectable antiquity were anathematised as Hanoverian, while much that was modern and continental was hailed as being what was called "correct." True it is that many old customs appeared in such base and slovenly guise as to be almost unrecognisable as embodiments of genuine tradition, and so they came to be swept away as mere accretions of sloth and carelessness.

Hence the mischievousness of the restoring temper. The spoliation under Edward VI., the unauthorised destruction by Elizabethan bishops, the fanaticism and violence of the Cromwellians, and the indifference of the Georgian period were mainly negative in their action; but the Victorian revival, however excellent in intention, had perhaps more pernicious results than any previous age, in that then, for the first time, tradition was not only broken—that had happened during the Commonwealth — but contradicted and reversed by the introduction of new and alien principles.

Thus, in all that concerns the *instrumenta* of public worship, the church of the XXth century has succeeded to a



Patricio, Breconshire: Rood Altar and Detail of Screen.



Patricio, Breconshire: showing untouched Rood Altar against the Screen.

dimnosa hereditas of chaos and vulgarity. Much of the prevalent confusion is mere want of discrimination. But neglect of essentials is not to be compensated for by insistence on non-essentials, and when things get "out of scale," that over-emphasis which we call vulgarity inevitably follows. During the last twenty years ecclesiology has made quiet and steady progress. It has become less *dilettante* and more exact, and the increased knowledge of the past so gained will in time show the way out of the present tangle. The systematic study of inventories, churchwardens' accounts, and illuminated books has solved many of the difficulties of the earlier ecclesiologists, and to-day comparatively little remains to be done but to popularise the results of this research, in order that those who have the charge of our churches may be saved from falling into the errors of their predecessors. Among books that have been published with this worthy object the recent work * by Messrs. Cox and Harvey will hold a high place. The authors treat the subject of "English Church Furniture" as sound antiquaries, though by no means from the dry museum point of view, but rather with a lively sense of the value in use of the things of which they write.

England is the country of screens *par excellence*, and so, as might be expected, the chapter on "Screens and Rood-lofts" is one of the most interesting in the book. About 1,479 churches are enumerated as containing screen-work, though in the vast majority of cases in a more or less mutilated condition. The number of parish rood-lofts still in position is relatively so small—not more than about fifteen in all—that it is not generally realised how incomplete a chancel screen really is without its gallery. Not only is the gallery-front a beautiful thing in itself, but the strong line of the parapet cutting across the chancel arch gives added value to the light open-work below. The loft, too, was a utilitarian structure, the loss of which has been attended with sundry inconveniences, as will be seen.

The history of the rood-loft in parish churches is closely connected with the increase in choral singing that took place in the XVth century. It was in fact little else than a music gallery for the accommodation of the minstrels who were employed to sing "prick-song" on high days, and frequently contained a "pair of organs." Consequently the destruction of the lofts begun under Elizabeth led to the erection of western galleries for the musicians, and the removal of these in recent times has brought the singers into the chancel, a position which is now recognised by competent opinion as being musically, artistically, and liturgically bad. Not only is the floor the worst place for both singers and organs, but their presence there has led to the cumbering of the chancel with stalls and benches. Chancels should never be crammed with furniture; here, if anywhere in the church, it is essential to aim at an austere and effective spaciousness. Nothing makes a statelier termination to a church of moderate size than a long chancel furnished merely with seats for the clergy against the screen, the desk for the cantors in the midst, and the distant altar in mysterious isolation. The effect is probably even finer and more expressive of the Gothic spirit than that of the choirs of the collegiate churches with their rich ranges of canopied stalls. This may be to some extent realised in the unrestored church of Dennington. It is, moreover, in accordance with the rule that "the chancels shall remain as in times past," that is to say, almost empty.

One striking accompaniment of the screen, the tympanum, is less familiar even than the rood-loft; and though, like most good things, it was a development on traditional lines of something that had gone before, it may be ranked among the happiest inventions of the later Middle Ages. In many early and unaltered churches the importance of the ritual division between nave and sanctuary is strongly emphasised. The chancel arch is very low and narrow, scarcely more than a doorway, sometimes flanked by hagioscopes (*cf.* Stockton and Bradford-on-Avon), and leaving considerable wall-space above; the whole arrangement being strongly reminiscent of the seclusion of the primitive altar.

C

* "English Church Furniture." By J. Charles Cox, LL.D., F.S.A., and Alfred Harvey, M.D. London: Methuen & Co. 1908.

In the XIVth century the solidity of the barrier was greatly reduced, of which the stone screens of Stebbing and Great Bardfield are familiar instances; but in the following century, which was pre-eminently the age of timber, woodwork took the place of masonry, and instead of the low arch and solid wall we find a lofty arch filled as to its upper part with close boarding. This was simply an extension of the eastern parapet of the loft, which was raised to the soffit of the arch, or where there was no arch to the apex of the roof (as at Llanelieu). The partition so formed was usually painted with the Doom, sometimes with a simple decorative diaper, and against the background so formed was planted the rood with its attendant images in three-quarter relief.

The famous Wenhaston Doom is one of these arch *tympana*, of which a few still exist *in situ* (as at Mitcheldean and Bettws Newydd), while others have been taken down and refixed elsewhere in the church (as at Dauntsey and Winsham). In many cases the marks of the framing upon the stonework of the arch above testify to its former existence. The number and distribution of known examples show it to have been a fairly common treatment. The effect of concentrated light from the chancel windows seen through the tracery of the screen below the solid gallery and tympanum is very fine and mysterious; and if singers were placed in the loft the acoustic advantages of a boarded background would probably be considerable.

It is to be feared that the sense of intimate connexion between the treatment of the altar and that of the chancel screen has been, to a great extent, lost. The old English altar, raised on few and shallow steps, the low reredos of about the same height as the altar itself, and the great east window with its sill raised only 7 ft. or 8 ft. above the floor of the nave, were the governing factors in the design of the screen and the beauty of the whole was greatly enhanced by being seen between the muntins. It was only in the monastic choirs, where the screen was a solid erection, unpierced save for a doorway, that the high wall of imagery behind the high altar was permitted to take the place of the window. The iron grille before the altar, with its great gilt *retablo* so common in Spanish churches, is rational enough, but before a wall the greater part of which is window, it is ineffective and lost. Where a high reredos has been erected blocking the east window of an old church, or an iron screen set up, or the altar, raised upon a flight of steps, the whole *rationale* of English tradition, with its sober and delicate sense of congruity, has been violated.

Llanelieu, Breconshire.

It is difficult to quarrel with the beautiful seats of XVth century date still to be found in many churches, but it must not be forgotten that, historically speaking, pews are no essential part of the furniture of churches, and their introduction has been productive of no little evil. There is little evidence for their existence before the XIIIth century. Stone bench-tables built against the walls, as in some early Cornish churches, or round the piers, were probably the earliest form of fixed seat. Sitting is the posture of authority, consequently no seats are mentioned in the service-books except that of the bishop; nor do the conservative communions of the East, which have retained some of their primitive austerity, provide seats for the faithful. It is well to bear this in mind when modern custom puts sittings in the very forefront of importance. No church should present the appearance of a closely-seated auditorium, intersected by the narrowest possible *vomitoria*. The alleys are, as a rule, far too narrow. Indeed, it is no paradox to say that, given a wide nave, the seating arrangements only begin to look dignified when the alleys themselves are wider than the blocks of seats which they separate. The mediæval plan grouped the benches into small islands, divided by wide gangways, and leaving ample space both before the screen and about the doors and front; a sensible provision for avoidance of crushing and confusion as the congregation dispersed. It is possible that in some churches the women alone occupied the seats, the men of the congregation standing in the free space at the west end.

The amount of destruction that was accomplished during the last century is almost incredible. In Devon alone some seventy screens were demolished, including exceptionally fine examples at Churston Ferrers, Alvington West, and Bridestowe (p. 109). The screen was removed from Moreton Hampstead so recently as 1897. Every county tells a similar tale. The beautiful carved work in Cornwall was especially obnoxious to the restorers. Dr. Cox says:—

"At a visit to Cornwall in the seventies of last century, bench ends and other beautiful bits of fine old oak carving from roofs and elsewhere were to be met with worked up into public-house settles, or serving as sideboards or ornamental panelling in the houses of gentlefolk or well-to-do tradesmen. Others could be seen rotting in timber-yards or at village builders', where they could be picked up for a trifle (p. 265)."

In one place in the country we hear of the roof carving being sold to pay for a new roof—probably of pitch-pine. At Lastingham, in Yorkshire, the churchwardens gave the screen for firewood to the plumbers who were repairing the roof.

Perhaps more offensive even than actual demolition, because more stupid, is the wresting of things from their proper use.

"At St. Breward some of the best of the bench ends were painted and gilded and stuck up ove the altar to form an unsightly and unseemly reredos. Bench-ends have also been absurdly turned into a reredos at Tintagel Church. Elsewhere they have been stuck together to make pulpits or reading-desks (p. 266)."

At All Saints, Northampton, a fine classical screen of 1676 has been worked up into a western vestibule. A smiliar fate has befallen the screens at Marston S. Lawrence and Holdenby, the latter a work of John Thorpe. At Bridgewater

fragments of the screen have been converted into a corporation pew; elsewhere into organ-cases and reredoses.

It seems unlikely that any important examples of mediæval furniture have escaped the notice of the authors of this most useful book; indeed they tell us that all the old churches of certain counties have been visited. Hitherto the information now brought together was only to be found by laboriously searching the transactions of local societies, or not to be found at all except in the buildings themselves. All who are interested in archæological matters, and more especially those who have to deal with old churches in any capacity, owe a debt of gratitude to the authors for providing them with such a storehouse of information; and will fervently re-echo the wish expressed in the preface that the publication of this book "may serve as some slight check on the grievous destruction which ignorance and falsely-directed zeal have wrought, even in quite recent years, among ancient church fittings, which ought to be regarded as the monuments of the piety and artistic feeling of bygone days."

The screen at Patricio, Breconshire, is a singularly interesting example, for not only does it retain its loft and gallery front, but the altars as well. It was the ordinary rule for every parish church, however small, to have three altars at least, and where there were neither aisles, transepts, nor responds of adequate width, the two minor altars would be set against the screen on either side of the chancel door. "The vast majority were of stone and severely plain. A large slab of freestone or marble, bevelled on its under surface and marked with five crosses, was generally in this country supported on a built-up pedestal of stone" ("English Church Furniture," page 2). In the present instance the *mensa* appears to be of slate, no doubt the only local material procurable in slabs of sufficient size.

Llanelieu in the same county possesses a remarkable double screen. The flooring of the loft and the western parapet, as well as the staircase, have been removed; the eastern parapet, rood-beam, and tympanum remain. The latter has a number of quatrefoil and circular piercings to enable the musicians in the loft to follow the service in the sanctuary. A painted rood, possibly of Marian date, occupies the place of the former carved one, the socket of which can be clearly seen upon the beam.

The Llanvillo example has two curious projections on the front of the loft, undoubtedly mediæval, but apparently added as an afterthought. They may have served as pedestals to support the images of SS. Mary and John.

The illustrations are from photographs by the Rev. E. Hermitage Day, D.D.

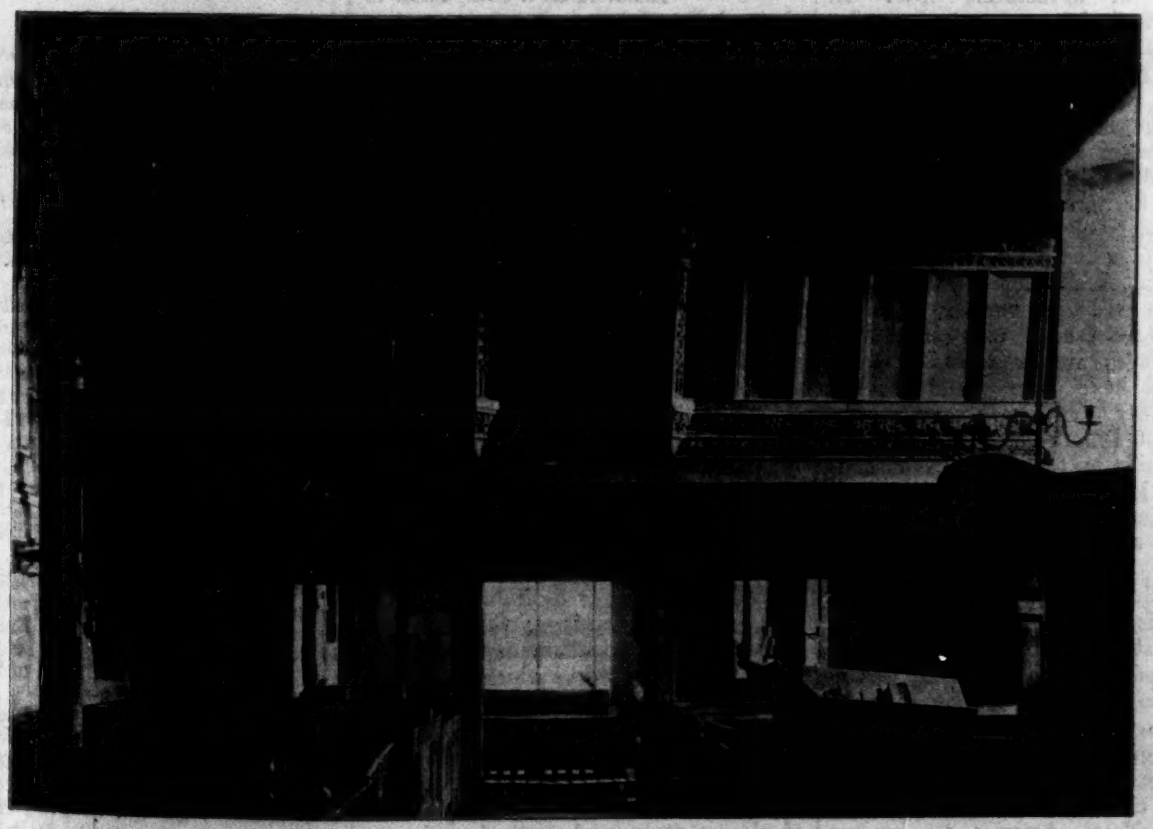
NOTES.

Definitions in Private Acts.

The Report of the Select Committee of the House of Commons to whom are referred the private Bills promoted by local authorities relating to police and sanitary regulations contains one very practical recommendation which it is to be hoped may be acted upon. It is recommended that such common terms as "new street," "common lodging house," etc., should receive a definition by statute to attain uniformity and avoid confusion. A careful and uniform definition of such terms, and especially of the words "drain" and "sewer," as we have frequently pointed out, would do much to smooth away the difficulties now experienced in connexion with such matters and avoid the necessity for litigation. Private Acts occupy a somewhat anomalous position, and a very slight variation in their wording may operate to differentiate the law as laid down by cases decided on public and general statutes; uniformity of general definitions would therefore do much to simplify matters, and would enable both the authorities and the public more readily to appreciate their respective powers and liabilities.

Amendment of London Building Rules.

ALTHOUGH recognising the desirability of dealing in a thorough manner with the existing building laws of the metropolis, the County Council appear to consider it inadvisable to act until the fate of the Town Planning Bill has been decided. The Building Act Committee of the Council very rightly think, however, that steps should at once be taken with a view to the amendment of the London Building Act, 1894, so as to facilitate the use of steel and reinforced concrete in the construction of buildings. Neither of these materials was contemplated by the Act of 1894, and it is clearly an injustice that their economical employment should be rendered impossible by obsolete regulations. This view has been urged upon the Council by the Royal Institute of British Architects and the Institution of Civil Engineers, and we hope that the matter will come before Parliament at an early date. We take this opportunity of suggesting to the London County Council that they should not fail to invite the co-operation of the leading architectural and engineering institutions in drawing up the proposed regulations for steel and reinforced concrete construction. If this course be not adopted any new proposals of the Council would probably represent the ideas of a few officials, not necessarily experts in either form of design, and



Llanvillo, Breconshire.

clearly not in a position to represent or to legislate satisfactorily for the great body of architects and engineers practising in London.

Loans on Reinforced Concrete Works.

WE are glad to learn that the Association of Municipal Engineers have addressed a further letter to the President of the Local Government Board pointing out the inconsistency of the attitude hitherto maintained by the Department in respect of the period for the repayment of loans on reinforced concrete structures. It is really absurd that while the period of thirty years should be allowed in the case of concrete and steel not in combination, and where the steel requires for preservation a constant renewal of painting (which it may not always get at the proper intervals), and that only fifteen years should be given for concrete and steel in combination, where the metal is effectually preserved against corrosion and fire. So far as we have been able to gather from his own remarks, Mr. Burns relies absolutely upon the advice given by his technical staff, who, being more conservative than the architectural and engineering experts of the Admiralty, the War Office, and the Office of Works, cannot bring themselves to approve a new-fangled thing like reinforced concrete. There is not the smallest foundation for the doubts expressed by the Local Government officials, and we join heartily in the appeal now made, hoping that with the courage he has displayed in other directions Mr. Burns will decline to be governed by his unreasonably prejudiced subordinates, and will institute a thorough inquiry into the merits of reinforced concrete for structural work.

More Forest Fires.

FROM Canada and the United States come reports of devastating fires. In Ontario a wall of flame twenty-five miles long is eating up pine forests at an alarming rate near the international boundary, and a second fire has broken out on the border of Lake Superior. The forests of Maine and other New England States are suffering from an epidemic of fires which last week caused clouds of vapour to hang for two days over the cities of Boston and New York. A still more serious state of things exists in various parts of Michigan, Wisconsin, and Minnesota. Many villages and a town of 4,000 inhabitants have been completely destroyed, other towns are threatened, and the city of Duluth is in danger from sparks carried by the wind. Thousands of people have been rendered homeless, and the loss of property involves millions of dollars, to say nothing of the timber consumed. The enormous extent of the fires is illustrated by the statement that clouds of dense smoke overhung Chicago last week, and that the atmosphere in parts of the great lakes was so thick as to render navigation difficult. The conflagrations demonstrate clearly the need for more effective precautions against fire and the necessity for the extension of fire-breaks through the forests of North America to prevent the spread of fires when once started.

Exhibition Buildings.

THE Lord Provost of Glasgow has had a Report prepared jointly by the City Engineer, the Valuer who sold the 1901 exhibition buildings, and the Superintendent of Parks, with the view of ascertaining how future exhibition buildings could be erected at a less cost and removed with greater facility. The chief points in the recommendation are that the materials should as far as possible consist of well-seasoned timber of marketable scantlings; that brickwork should be hard-burned clay bricks in lime mortar—no cement mortar to be used; that concrete in foundations and floors was unnecessary, good brickwork being sufficient foundation for heavy engine plant; that steel principals for roofs should be of such scantlings as are usually obtainable as stock sizes; and that circular or segmental forms of roofing should be avoided. This is all very well in an economic sense, but it seems likely that the adoption of the flat section of roofs would stand very much in the way of making the buildings architecturally effective; and the sufficiency of brick seatings for heavy machinery must surely depend very much on the nature of the ground. The main object seems to be to have exhibition buildings which can be removed as cheaply as possible and of which the materials should be of realisable value afterwards; but the architectural effectiveness of the buildings is an important element in the attractiveness and consequent success of an exhibition; and the erection of buildings with the main object of removing them as cheaply as possible may result in buildings that would be better worth removal than erection.

Statues in Public Gardens.

WHETHER it is desirable to erect a statue to Boswell in Lichfield as a companion to that of Dr. Johnson is an interesting literary question which is not (as such) within our province, but the discussion of the subject reminds us how little public recognition there is in England by public statues of eminent men of letters. No doubt the best of all monuments are the works which have been written by poet or historian, but the mere fact that attention has been called to this statue of Boswell shows how uncommon it is to erect statues to men other than those who have done public work. That it is well to impress on the public mind the place which has been gained in literature or art by this man or that cannot be doubted, and the mere reproduction of a life-size portrait is not only interesting, but is an adornment to a locality. Ferney is a poor little village, but the statue of Voltaire which looks on it gives something of dignity to the little place. Statues are certainly desirable additions to large public gardens; those on the Victoria Embankment are unquestionably improved by the works which have been placed in them. But these gardens are exceptional, and one would wish that the present Anglo-French *entente* might result in our following the French, and for the matter of that the German practice, of placing statues of men of genius in public parks and gardens.

Centenary of the Auction Mart, City.

WHILST the organised business of auctions in the City had its origin in the sales which were held in the old coffee-houses and similar places of resort, the existing Mart, as a central quarter for auctions, was established just one hundred years ago. On September 20, 1808, Alderman Ansley, the Lord Mayor, laid the first stone of the earlier buildings, named "The Auction Mart," in Bartholomew-lane, and having an additional entrance from Throgmorton-street, for which John Walters made the plans and designs. The principal floor was appropriated to the coffee-room, saloon, and general offices; merchants, brokers, and other frequenters of the Mart had their separate range of ten offices upon the mezzanine floor connected by open galleries overlooking the saloon; on the first floor were three apartments for the sale of real property, with consultation-rooms, and above were rooms for the sale of stocks-in-trade, merchandise, wines, pictures, and personal effects. After the demolition in 1865 of the old Mart business was transferred to premises in Tokenhouse-yard, Lothbury, which, we believe, were not first built for that purpose, and were greatly improved in 1900-3 by Mr. Charles H. Shoppee, who added a new saleroom on the second floor, and by rearranging the main stairs, which he extended upwards, provided better and much-needed means of access to the salerooms above the first floor. The present premises comprise the offices of the Estate Exchange and of the Auction Mart Company. E. Bassett Keeling's plans for the improvements by opening out Tokenhouse-yard into King's Arms-yard, Moorgate-street, in 1881 (see the illustration in our number of August 14, 1880) included the alteration of the then exposed north side of the Mart into harmony with the front elevation on the west side of Tokenhouse-yard.

SOME NOTES ON OLD LONDON.

Liberty of the Rolls, Rolls Chapel, and Record Office; Serjeants' Inn; Chancery-lane; Clifford's Inn; Bream's-buildings and Took's-court; and the Goldsmiths' Company's estate: 1801-1900.

Estate or Liberty of the Rolls.

HAVING founded in 1232 a charity for converted Jews, King Henry III. vested in the *Domus Conversorum* some escheated lands lying around—the later Rolls estate of nearly 3¼ acres—which became rich, being charged to the poor rates at 7,283*l.* in 1762; in 1846 it owned fifty-two houses, whereof three or four stood at the east end of Carey-street: eighth report, 1847, of Lord Morpeth's Commission. Le Converse Inn formed a store-house of Jewish learning, supplying teachers of Rabbinic and Hebrew to our Universities; Philip Ferdinand, the friend of Casaubon and Scaliger, James Wolfgang, and James Levita were inmates. John de Langton, afterwards Chancellor, was "clerk keeper of the Rolls of the King's Chancery" in 14 Edward I.; William de Birstall, who it is believed repaired the chapel, was made keeper on July 22, 1371, and upon his appointment as *Custos* of the *Domus* in April, 1377, the two offices became first formally combined. In 1528-9 Wolsey, who had lived in Chancery-lane south of the Rolls, set up two Courts "for speedy ridding of matters"; the one at York Place, since Whitehall, the other at the Rolls. Thomas Cromwell, made Keeper and Master on

October 8, 1534, and many of his successors lived in the earlier Rolls House and held their Courts there. A survey of 1550-2, when Mary Coke was sole convert, describes in detail the many rooms with their contents of the house in Rolls-yard, next north to the chapel, which Colin Campbell rebuilt in 1717-24 for Sir Joseph Jekyll—"Vitruvius Britannicus," Vol. III. The house served for the official residence of the Master of the Rolls as Keeper of the Records, Lord Lyndhurst being its last occupant, and for the Rolls Court until it was taken in August, 1881, for uses of the Record Office. Allen records in his "History of London," 1827, that Campbell built also nine of the houses in Rolls-yard, and that Jekyll built thirty more. Nos. 6-20, Rolls-yard, used latterly for record-storage, gave place sixteen years ago to the Record Office extension. The group of fifteen houses comprised the Cursitor's and Subpœna Offices, abolished by the Acts 5 & 6 Will. IV., c. 32, and 2 & 3 Will. IV., c. 3, and in our time the Petty Bag and Examiners' Offices in two houses built in 1718 and rebuilt in 1812; the Clerk of the Crown in Chancery removed to Westminster in 1846. The house next north to the Chancery-lane gateway, of rustic stone-work, was seventy years ago the Marshalsea or Palace Court Office, the records being kept at No. 14, Clifford's Inn, and in White Bear-yard, Saffron-hill. An Act of 7 Will. IV. and 1 Vict., c. 46, vested the entire estate with the house and chapel in the Crown; another of 1 & 2 Vict., c. 94, delivered all public records to the Master of the Rolls, and gave him a salary of 7,000*l.* in lieu of income from the estate, allowance as *Custos*, etc.

Rolls Chapel.

In his *Historia Major* Matthew Paris (*ob.* 1259) describes the founding of the house and chapel. On a margin of the MS. (now at Corpus Christi College, Cambridge), perhaps in Paris's own hand, is a drawing (Fig. 1) of the original structure, which seems

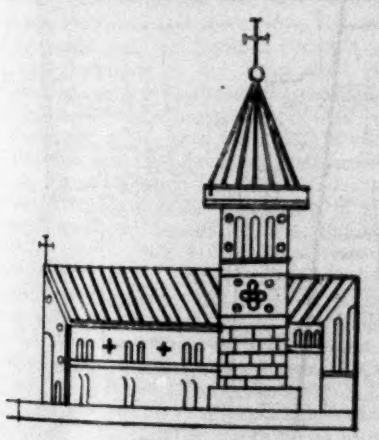


Fig. 1.

to be fairly authentical, for it delineates the chancel and tower—the latter has a pyramidal roof in B. Cole's "London Restored on J. Evelyn's Plan . . . 1666." The last state of the square tower at the east end of the south nave-wall, and the XIVth-century window, were drawn by Mr. Roland W. Paul [May 27, 1893]* after the demolition in 1880 of No. 1, Rolls-yard, which had been built in 1784 against the south wall as the Rolls Chapel Office for the Clerk of the Records and the Master's secretaries—see Tomkins's water-colour drawing, 1801, in the "Crowle" Pennant. Two slits lighted a newel stair up to the attic of the chapel. The stripping-off of the flint casing, from 3 in. to 4 in. thick, laid on in or about 1783, revealed other vestiges, for instance the south door two-centred arch, 2 ft. 3 in. radius, a lancet window in the north wall with its lower portion cut away for the Master's private door into his pew, and the XIIIth-century chancel-arch with its crown broken away for the later east window. The window was inserted, it is supposed, in or soon after 1610. The arch is rebuilt against an adjoining wall. The breadth is 30 ft. 3 in. over all; the span of 26 ft. 4 in. is struck at a radius of 15 ft. 2½ in. from two centres, which dimensions almost exactly satisfy the "three-fifths" theory. Forty-two years after the building of the chapel Edward I. issued from Kenilworth, August 16, 1275, a prescript (Rot. Claus. 3 Edw. I., m. 6) to his clerk, John de St. Denys, *Custos*, thus:—

"Cum vos procerto didiscimus propositum habeatis ad perfectionem capellae Sanctae Trinitatis Domus nostrae praedictae manum pro viribus apponendi ita quod corpus capellae praedictae linealiter protendatur. . . . Volumus et vobis ac Conversis Domus nostrae praedictae mandamus quod petram de aliis collaterialibus ejusdem capellae hunc inde adjacentibus pro voluntate vestra capiatis ad corpus praedictae capellae . . . perficiendum. . . ."

In effect John de St. Denys is directed to take stones from the side aisles for lengthening and perfecting the body of the Chapel of the Holy Trinity. An aisle is not clearly depicted, though there is a clearstory, in the MS. drawing which appears to have been made about fifteen years before the order went out to St. Denys. Pennant's too commonly trusted statement that the chapel was built by Inigo Jones, begun in 1617, and consecrated by the Bishop of London, clearly relates to Lincoln's Inn Chapel; the writer learns at the Bishop of London's Registry that there is no record there of the consecration of the Rolls Chapel. Its use as an official meeting-place of debtors and creditors and of mortgagees awaiting foreclosures ceased in December, 1887. The site, 60 ft. by 33 ft., is now that of the Record Office Museum; against the north wall are the monuments, with effigies, of Sir Richard Allington (1561), his wife, and their three daughters, Lord Bruce of Kinloss (1610), and Dr. John Younge, Dean of York and Master of the Rolls in 1510-6, a beautiful composition attributed to Torrigiano, similar to those of of Bernardo Guigni at Florence and Francisco Albergati at Bologna, with a sarcophagus in shape of a Florentine bridal chest. The late XVIIth-century heraldical glass is fixed in two of the south windows. An investigation made by Mr. W. J. Hardy, F.S.A., goes to show that the term "Liberty" was first adopted for the Rolls estate, in St. Dunstan's parish, in or shortly before 1664: Middlesex Records, edit. Jeaffreson, iii., p. 337.

The Record Office.

Whilst in the very early days the Keeper stored the rolls in his own house, it is not known precisely when (though apparently *temp.* Richard III.) they were first deposited in the chapel. John de Portjoye, Keeper of the Sumpter Horse, received allowance, 1271, for carriage of the Chancery Records which with the Chancery itself followed the King's Court—Rot. Claus. 55 Hen. III., m. 7. Hence the style of Portjoye of Chancery of the officer who conveyed the Chancery Records to and from the Rolls House and the Tower where the King's Treasury and the Wardrobe formed their chief depository in the next reign—Rot. Claus. 33 Edw. I. W. Prynne's dedication to Vol. IV. of "Parliamentary Writs" graphically describes the sorry state (*temp.* Charles II.) of the rolls and bundles in "Cæsar's Chapel" in the White Tower, including accumulations from the Rolls House. Alarm having been aroused by the partial destruction of the Cottonian library at Ashburnham House, Westminster, by fire on October 23, 1731, a report was made to Parliament (May 9, 1732) upon the documents and their peril in the Rolls Chapel and the White Tower. Forty years subsequently the Commons ordered that the Rolls Chapel should be fitted with boxes and presses; the pews and seats were ingeniously utilised. A Commission of Inquiry into the Public Records was renewed six times in the interval 1800-31. The Act 1 & 2 Vict., c. 94, revived the authority of the Master of the Rolls over records kept in the Tower immediately above the powder magazine in St. John's Chapel, Westminster Chapter-house, Carlton Ride, Cockspur-street, and in many other places. The Public Records Act, 1838, provided for their collection into a suitable building in charge of a Deputy Keeper, appointed in December of that year. Lord Langdale, Master of the Rolls, advocated the erection of a General Repository upon the Rolls estate; the Treasury proposed to adapt the Victoria Tower and roofs of the Houses of Parliament where Barry fitted up a trial room in 1845. Sir James Pennethorne's plan (Fig. 2), signed and dated January 25, 1847, delimits the Rolls [R . . . R], Bishops of Chichester [C . . . C], Bacon, Goldsmiths' Company [G . . . G], and contiguous estates. It shows the outline of his proposed Record Office and street improvements. The portion extending across Fetter-lane to Fleet-street, having an area of 54,600 ft. and planned for storage, has not been built, though an addition to the east end of the north block was made in 1870. At the inner angle was to stand the library, decagonal on plan, and 65 [ft. in diameter. Lord Romilly laid the first stone on May 24, 1851. The old red-brick houses, Nos. 6-20, Rolls-yard, with the gateway in Chancery-lane, having been pulled down in the winter of 1891-2, Messrs. Foster & Dicksee proceeded with the extension, afterwards taking in the site of the Rolls House and Chapel, under the superintendence of Sir John Taylor, who followed Pennethorne's designs. The west front measures 88 ft. from the basement by 220 ft., the elevations are of Portland oolite from the Weston quarries, with marble from Babbacombe for the rag work. The north portion is fitted with slate and steel store-presses, the south is allotted to the staff and their offices: the Fawcett system was adopted for the flooring throughout; the buildings were finished in the summer, 1895. The plans provide for another range, east and west, on the south side, and north of Clifford's Inn, to Fetter-lane, to enclose the carriage-way and take up the present open space and the site of the Judges' Chambers (Fig. 2), built by Sir Robert Smirke, 1837-9, and lately pulled down.

Serjeants' Inn.

As early as 14 Edw. III. the judges were chosen from the Order of Serjeants who had been settled in John Skaile's, or Farryngdon, Inn long before they leased it in 1411 for 4*l.* yearly from the Bishops of Ely. In 1758 they were joined there by the rest of the fraternity from Serjeants' Inn on the south side of Fleet-street. In 1834 the Serjeants bought the Chancery-lane freehold from the see of Ely. Sir Robert Smirke, R.A., rebuilt the Inn in 1837-8, the hall excepted, which he fitted as a court for Exchequer sittings in equity. The Judicature Act, 1873 (36 & 37 Vict., c. 66), practically abolished the ancient "Order of the Coif" by providing that "no person appointed a judge . . . shall henceforth be required to take or to have taken the degree of Serjeant-at-Law." The members of the Inn sold it at auction on February 23, 1877, for 57,100*l.*, and presented the twenty-six portraits to the National Portrait Gallery, some giving their shares of the proceeds to the Barristers' Benevolent Society. The transaction evoked criticism by those who failed to distinguish between the Order or Degree of Serjeants, *servientes ad Legem*, and the Society, a private elective sodality to which a judge or serjeant upon his appointment became eligible if it chose to elect him. Lord Bramwell put the case concisely in two letters he addressed to the *Times* in November, 1886, at the time of the sale of Staple Inn to Messrs. Trollope:—

"The Society of Serjeants was a private society for the convenience of its members. It had no duties, no powers. No one was bound to be a member of it; no one had a right to

* Dates within square brackets relate to illustrations in the *Builder*.

be. . . . A man might be a member [of the Order] without being a member of the Society or Inn. The statute 36 and 37 Vict., c. 66, had nothing to do with Serjeants' Inn . . . [which] . . . had no connection with any Inn of Court or Chancery. . . . The members of Serjeants' Inn sold the property . . . because they thought fit. The statute removed no impediment to their doing so. They could have done so before had they pleased."

Chancery-lane.

Symonds' Inn, not a regular Inn of Chancery, was built in 1600 by Thomas Symonds for officials of the Courts. The Masters, or Registrars, in Chancery removed thence to No. 25, Southampton-buildings, latterly the (old) Patent Office, built for them in pursuance of 32 Geo. III., c. 42, after designs by Chambers, and in October, 1845, the Rule Office to Stone-buildings. In the earlier half of the XIXth century the Inn included the offices of the Registrar of Affidavits, at No. 10, and of the Clerk of the Papers—abolished by 2 & 3 Will. IV., c. 3, and 1 Vict., c. 30. The four blocks, No. 22 in the lane were erected upon most of the site in 1874-5, the lease being held from the Ecclesiastical Commissioners. Bladen tells us, 1701, that by a private Act of 31 Hen. VIII., the King bestowed upon the Duke of Norfolk and his wife Katharine certain lands and manors belonging to St. Mary Magdalene Priory, a house of black canons at Nocton, in the parts of Kesteven, Lincs., amongst them being Harflu, or Hereflete, Inn with its brew-house, occupied by the Six Clerks in Chancery. A fire destroyed the timber house on December 20, 1621. In his treatise "The Third Universitie of England," printed at the end of E. Howes's *Annales*, 1615-31, Sir George Buc relates how John* Kedermister, one of the Six Clerks, established the brotherhood in the Inn for their commons and separate lodging. He rebuilt the house of brick with vaulted rooms for the Inrolment records. Hereflete's, known also as Kedermister's, Inn stood nearly opposite Rolls House: see J. Long's "plott," 1592, in the *Builder* of July 6, 1907, and Ogilby & Morgan's survey of 1677. The Six Clerks and the Inrolment Office moved to Nos. 10-1 in the east block of Stone-buildings built for them out of the suitors' fund in Lincoln's Inn garden after Sir Robert Taylor's designs, under the Acts 14 Geo. III., c. 43, and 15 Geo. III., cc. 22 and 56; his clerk, John Leach, who made the working drawings, became Master of the Rolls. Philip Hardwick, R.A., completed Taylor's designs in the north and west blocks. The Act 5 & 6 Vict., c. 103, replaced the Six Clerks, at No. 10, with the Record and Writ Clerks, now entitled Masters of the Supreme Court. In 1883 Mr. S. Salter added a story to Nos. 8, 9, and 11, vacated by the Registrars (8 and 9), and the Inrolment Office (11), remodelling them as chambers, and reconstructed the interior of No. 10 as a drill-hall and school-at-arms for the Inns of Court Volunteers. The restaurant and offices on the east side of No. 1 are by Mr. G. St. Pierre Harris, 1893. On the site of Hereflete's Inn stands the Law Society's Institute, 1832, by Lewis Vulliamy: Sir Charles Barry won the second premium. The "Society of Gentlemen Practisers in the Courts of Law and Equity," founded in or about 1720, first

* "Edmund" on his son-in-law Sir Peter Scott's monument (1622) in Camberwell parish church.

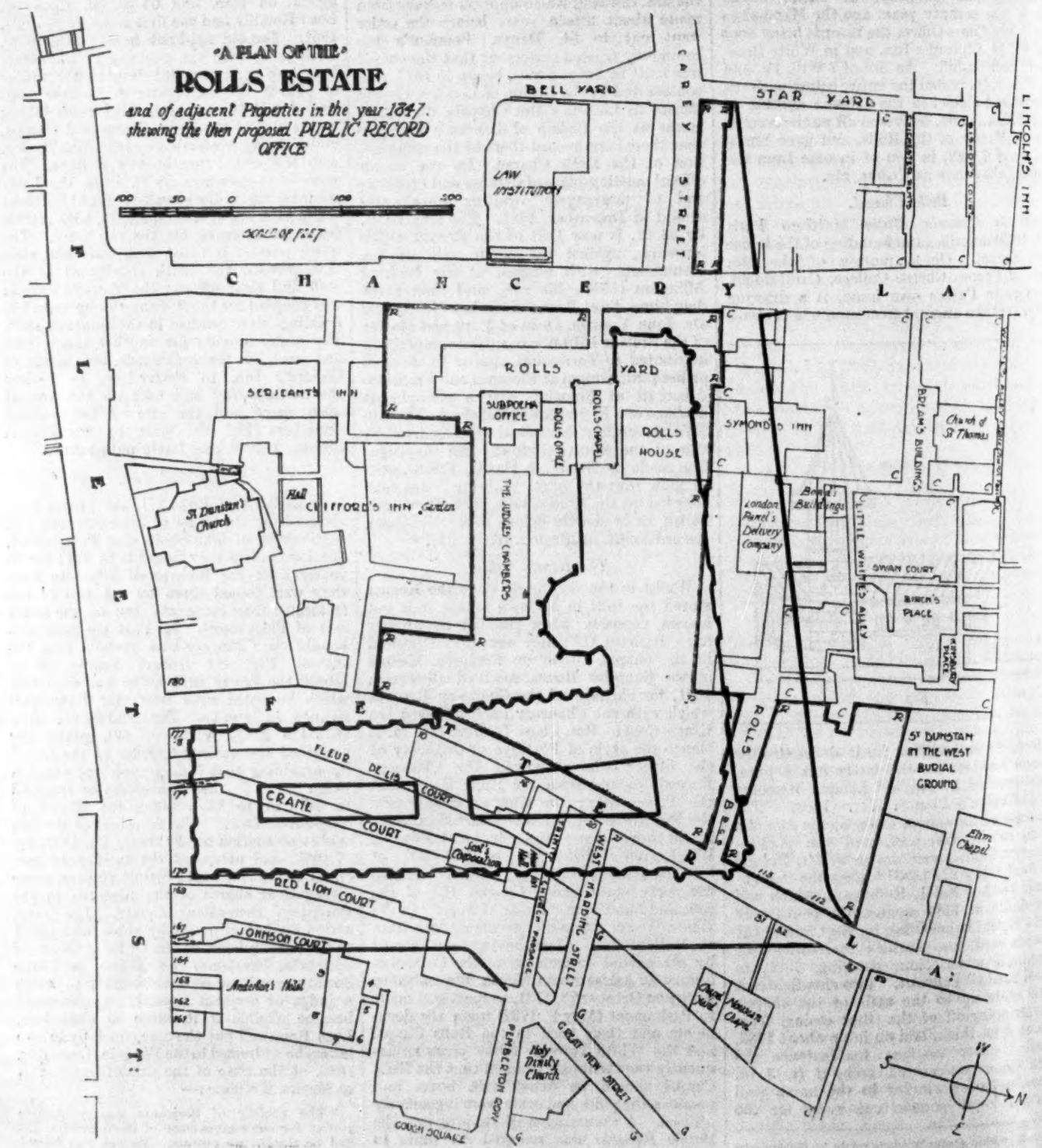


Fig. 2.

settled in Chancery-lane in 1823; they commonly met in the Devil Tavern by Temple Bar, the earliest known minute of their proceedings relates to 1739. Vulliamy's building embraced the portico, entrance-halls in the lane and Bell-yard, library, reading-hall, etc., erected by Lee & Sons at a cost of 53,715*l.*, including 17,225*l.* for the land and 33,213*l.* for the fabric, on the site of Nos. 108-9, Chancery-lane, the Crown and Rolls coffee-house in Pope's Head-court at the rear, and two houses in Bell-yard. The Society bought Nos. 103-5 for 5,735*l.* for the north wing in 1838, and ten years afterwards paid 12,425*l.* for sixteen houses (selling part of the land for 6,700*l.* to the Law Fire Insurance Company) for the south wing—the two wings being built by Baker & Co. after designs of Vulliamy and his successor, in 1853, P. Hardwick. In 1868-70 Hardwick added the examination-hall and other rooms, Messrs. Trollope & Sons being the contractors, on the site of Nos. 101-2, Chancery-lane, and old premises in Carey-street and Bell-yard acquired for 19,625*l.* The King and Queen opened on March 23, 1904, the block abutting on Carey-street and Bell-yard, built by Messrs. Colls & Sons after Mr. H. Percy Adams's designs. [April 23, 1904, exterior, hall-interior, and details of decoration.] The lions on the railings are, the writer is authoritatively informed, copies (only) of those by Alfred Stevens at the British Museum. There is some old panelling from New Inn.

Clifford's Inn.

This, the oldest Inn in Chancery, was affiliated to the Inner Temple. On June 19, 1900, Mr. Justice Cozens-Hardy delivered judgment in Smith *v.* Kerr, a suit brought practically to determine whether the property was held by the trustees of the legal estate as privately owned by the members, or whether a conveyance of 1618 established a charitable trust. By an indenture of feoffment, March 29, 1618, between Francis fourth Earl of Cumberland and his son and heir Lord Clifford of the first part, Nicholas Sulyard, Principal, and the twelve "Rules" of the second part, and Richard Prescott and Richard Antrobus of the third part, the thirteen members of the house covenanted to pay to the Cliffords a capital sum of 600*l.* and a yearly rent of 4*l.*, thus becoming in effect co-founders with the Lords Clifford in trust of the Inn of Chancery for, as the indenture recites, "the good of the gentlemen of that Society and the benefit of the Common Wealth . . . nor to any other use interest or purpose." The Court held that the instrument negatives the idea of private ownership and proves a dedication to public or charitable purposes—the maintenance of a school of legal learning; the Court of Appeal upheld the decision (March 20, 1902). The members resolved to extinguish the Society, to sell the estate, and to place funds at the Attorney-General's disposal for the contemplated School of Law, which had already derived 50,000*l.* or more from the sale of New Inn. On May 14, 1903, Mr. W. Willett, builder, brought the property, about 38,000 ft. superficial, with a single bid of 100,000*l.*, the estimated rentals being 2,500*l.* per annum and the number of members fourteen. The oak panelling, and the carving partly in cedar, attributed to the Grinling Gibbons school, in a chamber 21 ft. by 15 ft. and 10 ft. high at No. 3, which John Penhallow rebuilt in 1686, was bought at auction for 550 guineas for the Victoria and Albert Museum. [September 23-30, 1905; Mr. John Barbour's measured drawings.] The *Builder* of January 10, 1903, contains some historical particulars of the Inn with a description and plan of the buildings. Under the Act, 1829, for rebuilding St. Dunstan Church, some chambers were taken for 5,000*l.*, which was applied by order of the Court of Exchequer towards building and improving houses and chambers in the Inn. The garden is now open to the public and the property has been offered for sale.

Bream's-buildings and Took's-court.

The Ecclesiastical Commissioners acquired Bream's-buildings, on the Chichester estate, in 1879, when the dilapidated houses were inhabited by the very poor, mostly Irish, and the criminal classes. The squalid dwellings were cleared away in 1881-2 for a road through the purlieus of Swan-court, Birch's-place, and Kingsbury-place into Fetter-lane: the St. Dunstan graveyard has been taken for the Greystoke-place Board School and playground; on the north-east is Elim Chapel (1790), latterly an engineer's workshop, gutted by a fire on September 2 last. St. Thomas Church, closed on May 23, 1886, was erected by the law-stationers in 1842 for 800 sittings from Davis and Johnson's designs after the quasi-Norman manner. Next, east, to the site of the church are the editorial and publishing offices of the *Athenæum* (1828) and *Notes and Queries* (1849), with the Athenæum Press [April 9, 1892; Mr. Wm. C. Street], B. E. Nightingale (*ob.* 1903) being the contractor. The two journals migrated thither from Mr. John C. Francis's premises, Nos. 4 and 22, Took's-court, Cursitor-street, required for an enlargement of H.M.'s Patent Office. The *Athenæum* had been printed there since June 1830, and *Notes and Queries* since 1872, when the ownership passed to the proprietor of the *Athenæum*; in December, 1885, the publishing offices of the two were transferred from No. 20, Wellington-street, Strand, to No. 4, Took's-court. On the east side of Church-passage are Mr. Horace Cox's printing works, Windsor House, where the *Builder* is printed, and the offices of the *Field*, the *Queen*, and the *Law Times*, built by Dove Brothers, from Messrs. Satchell & Edwards's designs. On the south side of the street is Birkbeck College, by Messrs. Fowler & Hill, opened in 1884 as the Birkbeck Institute, founded in Southampton-buildings as the London Mechanics' Institute by Dr. Birkbeck in 1823, and afterwards named the Birkbeck Literary and Scientific Institution. The new premises of the Birkbeck Bank and Building Society supplanted, 1895, the last remaining portion of the old building.

Goldsmiths' Company's Estate, and Holy Trinity Church.

The Goldsmiths' Company own most of the property (Fig. 3) in and around New Street-square, lying in the heart of Saxon London. Their coat-arms, in relief, mark many of the houses, comprising Messrs. Eyre & Spottiswoode's and Messrs. Spottiswoode & Co.'s premises. A stone tablet inscribed "Goldsmiths Row" was on the George Tavern, No. 8, East Harding-street, before the rebuilding, by Mr. H. L. Newton, in 1891. The street-names commemorate benefactors to the Company's charities: for example, Agas (or Agnes) Hardinge (1513), Sir James Pemberton (1613), and Thomas Harding (1824); Francis Ash (1652) bequeathed six houses in Little New-street; Thomas Atte-Hayes's bequest (1405) included the Horn-on-the-Hoop, since Anderton's coffee-house in Fleet-street, and John Hille left houses, since Nos. 162-3, Fleet-street. McLean's-buildings, in which are some fine doorways, in the area of New Street-square, occupy the site of the tenements belonging to the Agas Hardinge charity which were pulled down in 1852, and of which there are two water-colour drawings by T. H. Shepherd in the Crace Collection. Charles Eyre bought one-half of John Baskett's monopoly as printer and stationer to the King, and in 1770 sold a share of his patent as King's printer to William Strahan; they then removed from Printing House-square, Blackfriars, to Little New-street. At No. 10, by the sign of the dove, or pigeon, corner of Printer-street, Dr. Johnson, Warburton, Robertson, and Hume often visited Strahan, whose house with its garden and private chapel, and Nos. 11-2, gave way about forty years ago to Messrs. Eyre & Spottiswoode's binders' warehouse: by Mr. Dawson, architect to the Goldsmiths' Company. Nos. 13-6, Little New-street, were rebuilt in 1899 by Mr. H. Dawson, and Nos. 12-4, New Street-square (north side), by Mr. R. C. Murray: at No. 8 are some massive brass railings. The district parish of Holy Trinity was taken out of St. Bride's, and Howard & Nixon built the church, 1837-8, for 1,100 sittings, after designs by John Shaw the younger, in what then passed for the Norman manner, upon a site given by the Goldsmiths' at the corner of Great New-street and Pemberton-row (formerly Three Leg-alley), near Gough-square. Shaw displayed much merit and originality in suiting his plan—a hexagon 47½ ft. in diameter—to the triangular site. On the north-east and south-east sides he made two octagonal recesses for pew[illegible] Sir Arthur Blomfield rearranged the interior in 1873. The church, faced with yellow brick, has a western tower about 80 ft. high. The site and materials, which, it appears, now belong to the Goldsmiths', are for sale, the benefice having been united with that of St. Bride and the precincts of Bridewell and Whitefriars in May, 1906.

Crane-court, and Newton Hall.

In 1782 the Royal Scottish Corporation quitted their hospital between the Fleet and the King's Printing House, Blackfriars, for

(*Continued on page* 305.)

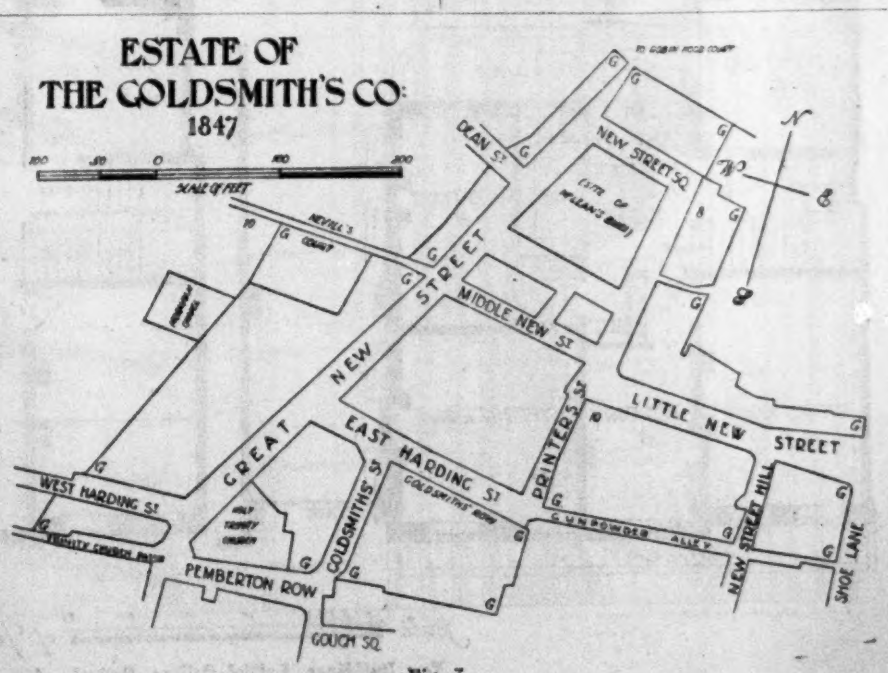


Fig. 3.

THE BUILDER

SEPTEMBER 19, 1908.

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MEETINGS.

WEDNESDAY, SEPTEMBER 23.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. Priestley on "Sanitary Law."—I, 7 p.m.

FRIDAY, SEPTEMBER 25.

Royal Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. Priestley on "Sanitary Law."—II, 7 p.m.

SATURDAY, SEPTEMBER 26.

Royal Sanitary Institute,—Inspection and Demonstration at Wimbledon Sewage Works, at 2.45 p.m.

Illustrations.

LONDON, EDINBURGH, AND GLASGOW ASSURANCE COMPANY'S OFFICES, EUSTON-SQUARE.

THIS detail perspective drawing shows the columns and pediment of the London, Edinburgh, and Glasgow Assurance Company's Offices, Euston-square, a general view of which appeared in last year's Royal Academy.

The elevations are in Portland stone, and the carving was executed by Messrs. Farmer & Brindley. The total cost of the building was about 40,000*l*., the general contractors being Messrs. Foster & Dicksee, of Rugby. The architect was Professor Beresford Pite.

The present drawing was exhibited in this year's Royal Academy.

DESIGN FOR A MUSEUM BUILDING.

THIS drawing was a sketch made to accompany a set of $\frac{1}{16}$th scale drawings, the whole forming one of those schemes which architects so often produce with the hope of inspiring a possible client.

The building shown is a museum of antiquities for a large town, to be used not only for the storage of objects, but for research and teaching as well. For this purpose lecture and class rooms formed part of the scheme. The plan in the corner shows the ground story; the museum rooms on this floor are lit from the covered courts (for larger objects) and from windows, those in the rear of the building receiving light above the library and lecture rooms. The museum rooms on the first floor are completely top-lighted.

As the drawings never proceeded beyond a sketch stage the details of the façades have not been completely studied.

The architect is Mr. C. H. Reilly. The drawing was exhibited at the Royal Academy this year.

NEW BUILDINGS, BALLIOL COLLEGE, OXFORD.

THE building shown by the accompanying illustrations is an addition to that portion of the College on the wide street known as St. Giles, and the main front faces nearly due west.

It consists of sets of rooms for undergraduates, each set consisting of sitting-room and bedroom, and having the traditional door or "oak"; one set on the first floor of Fellow's rooms, consisting of library, sitting-room and bedroom, a guests' room, scouts' pantries, water-closets, etc., and bath and dressing rooms with furnace chamber in the basement.

The building is faced with Taynton stone, a warm buff-coloured Oxfordshire oolite, and roofed with green Westmorland slates. The general contractors were Messrs. Holloway Brothers, of London; the hot-water plumbing was done by Messrs. C. P. Kinnell & Co., of Southwark-street, S.E.; the gates and ornamental ironwork by Messrs. F. Clubb & Son, of Hampstead; the stone carving by Mr. T. E. Jago, of 7, Edward-street, S.W.; and the casements and glazing by Messrs. Weldon & Co., of Croydon.

An XVIIIth-century oak staircase, some deal panelling, and a fine chimney-piece of the same period, from some much altered and dilapidated buildings that were removed to make way for the addition, have been incorporated in the new building.

The architect is Mr. Edward Warren, of Westminster.

A TOWN HOUSE, BRISBANE, QUEENSLAND.

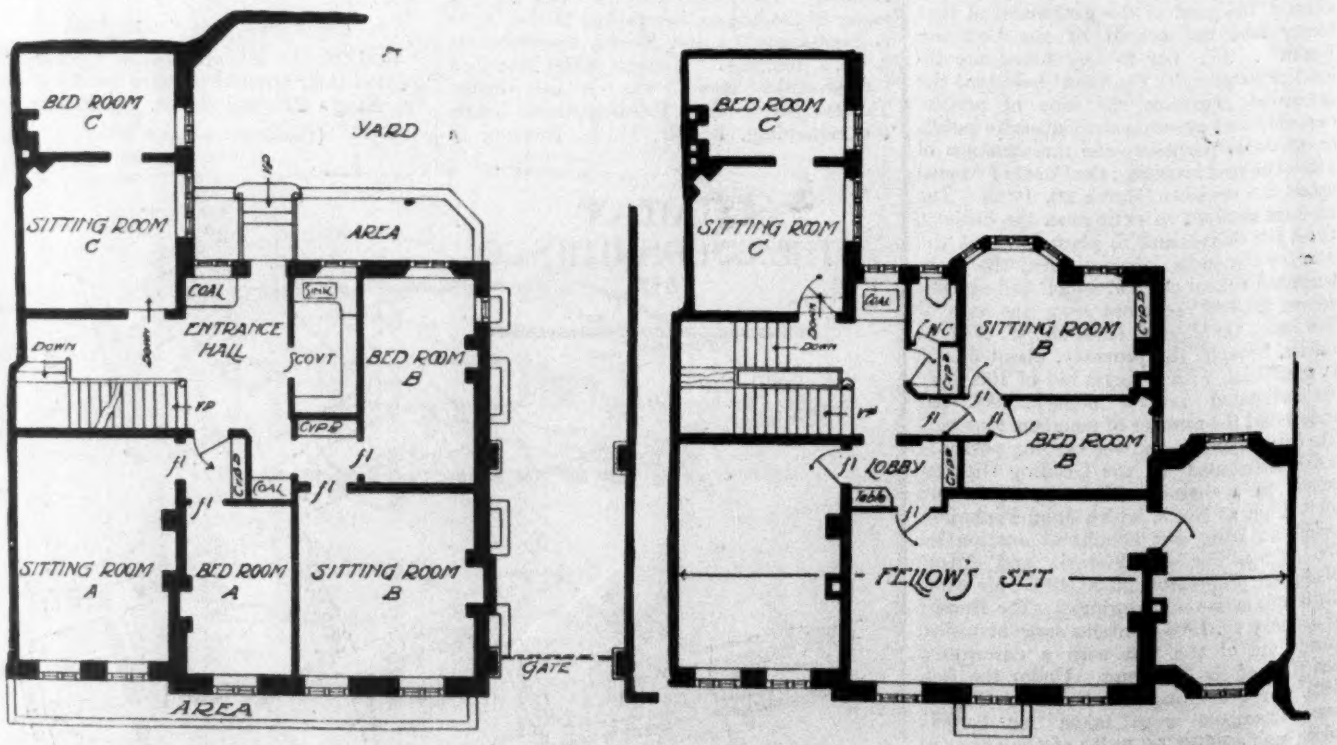
THE title appended to this by the architect is rather a surprise in connexion with the style of the building, as it is certainly what we in England should regard as essentially a country house. It suggests the idea that towns in Queensland are less urban in their architecture than in England.

Mr. Dods, who now practises in Brisbane, is, we believe, a London architect by education.

RECTORY, DONHEAD-ST. ANDREW.

THIS is a country Rectory built some years ago from the designs of Mr. C. E. Ponting, of Marlborough, and shows the refined style of treating domestic Gothic which is always characteristic of his work.

Owing to Mr. Ponting's absence, at this holiday period, he did not receive our request for a plan in time to send one, so that we can merely give it as an example of architectural treatment.



New Buildings, Balliol College, Oxford. Plans.

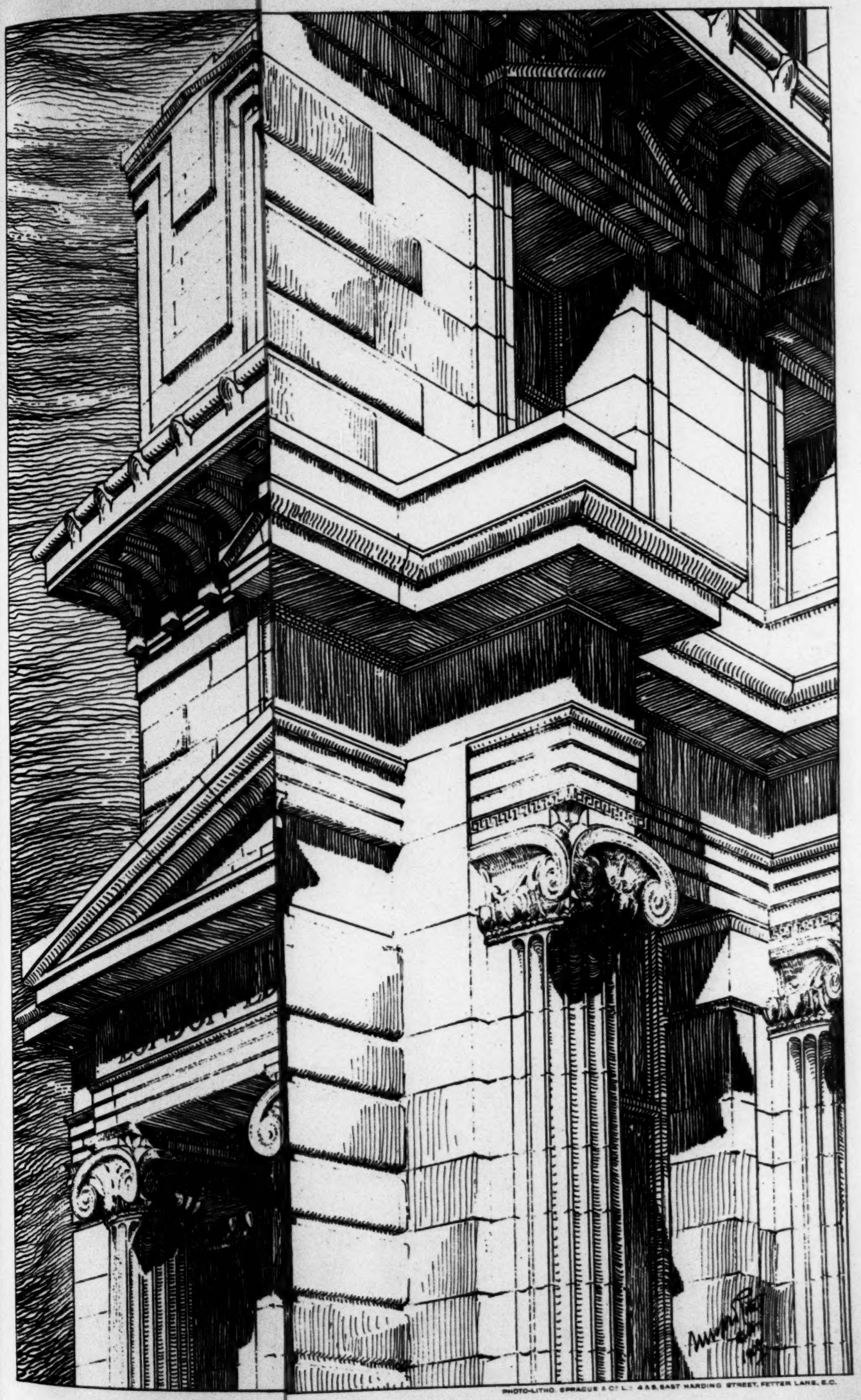


PHOTO-LITHO. SPRAGUE & Co LT.D. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

KSFORD PITE, F.R.I.B.A., ARCHITECT.

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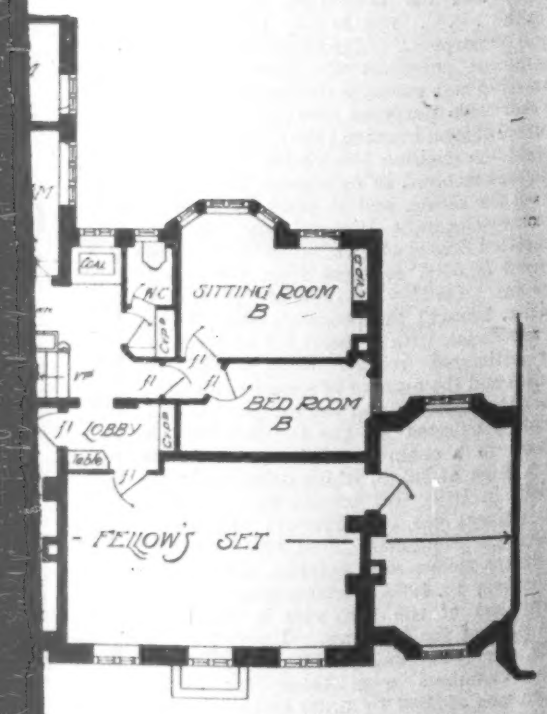


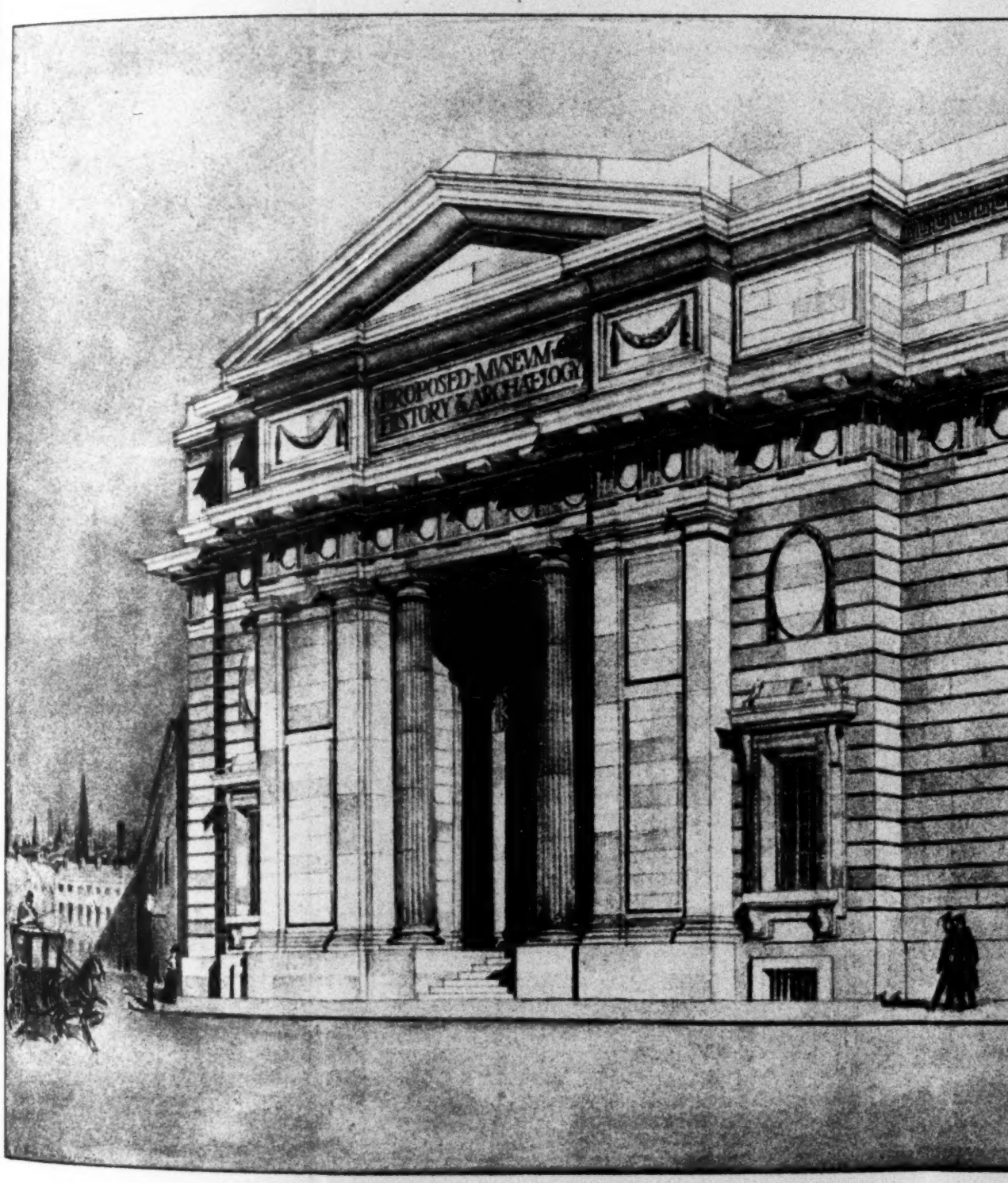
of Feet

Plans.

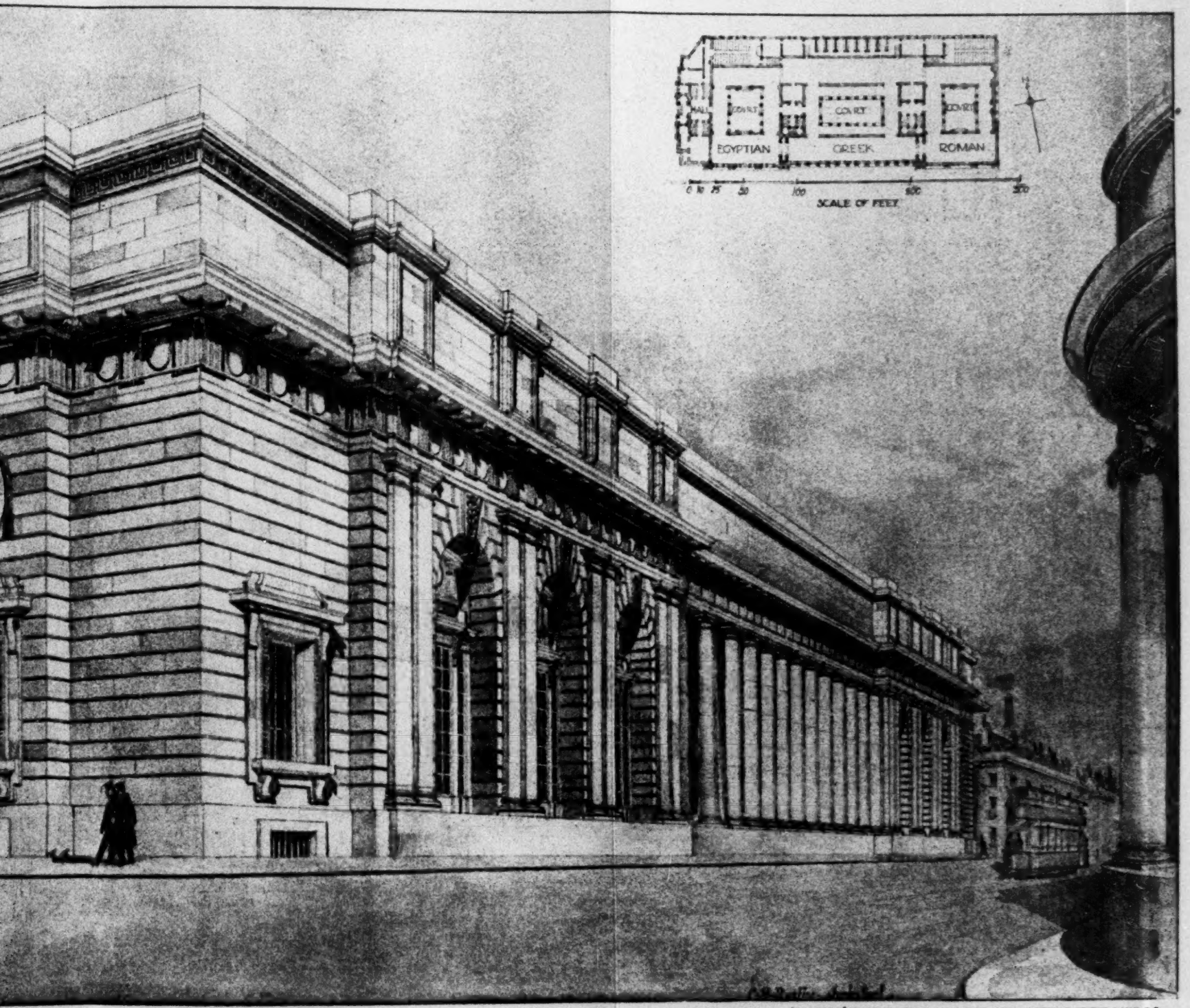
PEDIMENT: LONDON, EDINBURGH, & GLASGOW ASSURANCE CO

PHOTO-LITHO. SPRAGUE & Co. L.: 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

V ASSURANCE COMPANY'S BUILDING, EUSTON SQUARE.—PROFESSOR BERESFORD PITE, F.R.I.B.A., ARCHITECT.



A PROPOSED MUSEUM BUI



"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

OSED MUSEUM BUILDING.—By Mr. Charles H. Reilly, A.R.I.B.A.

BALLIOL COLLEGE·
OXFORD·
NEW BUILDINGS·

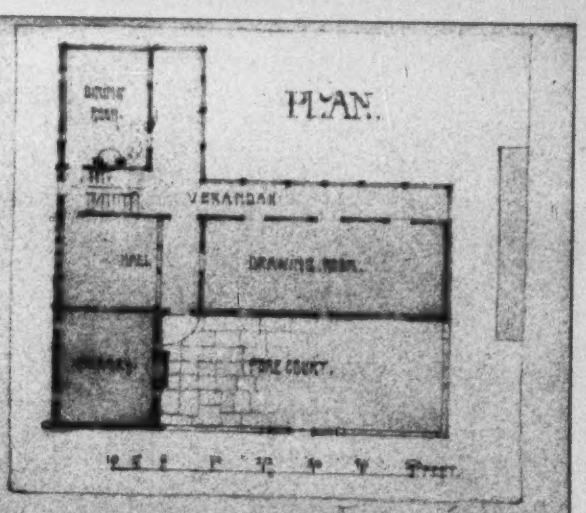
FRONT to ST GILES.

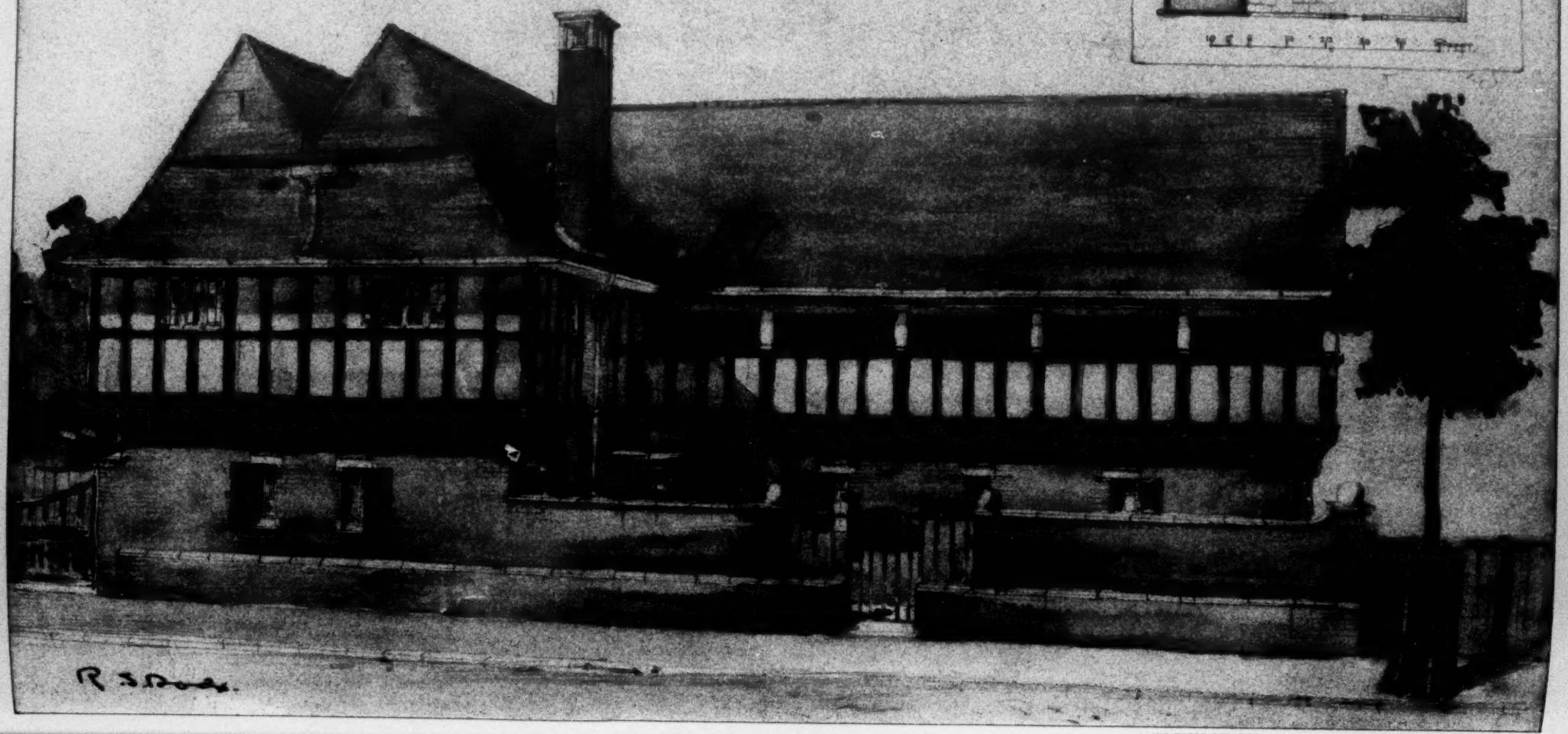
Edward Warren
Architect
March 1907.

"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BALLIOL COLLEGE, OXFORD: NEW BUILDING ON ST. GILES.—Mr. E. P. Warren, F.R.I.B.A., Architect.

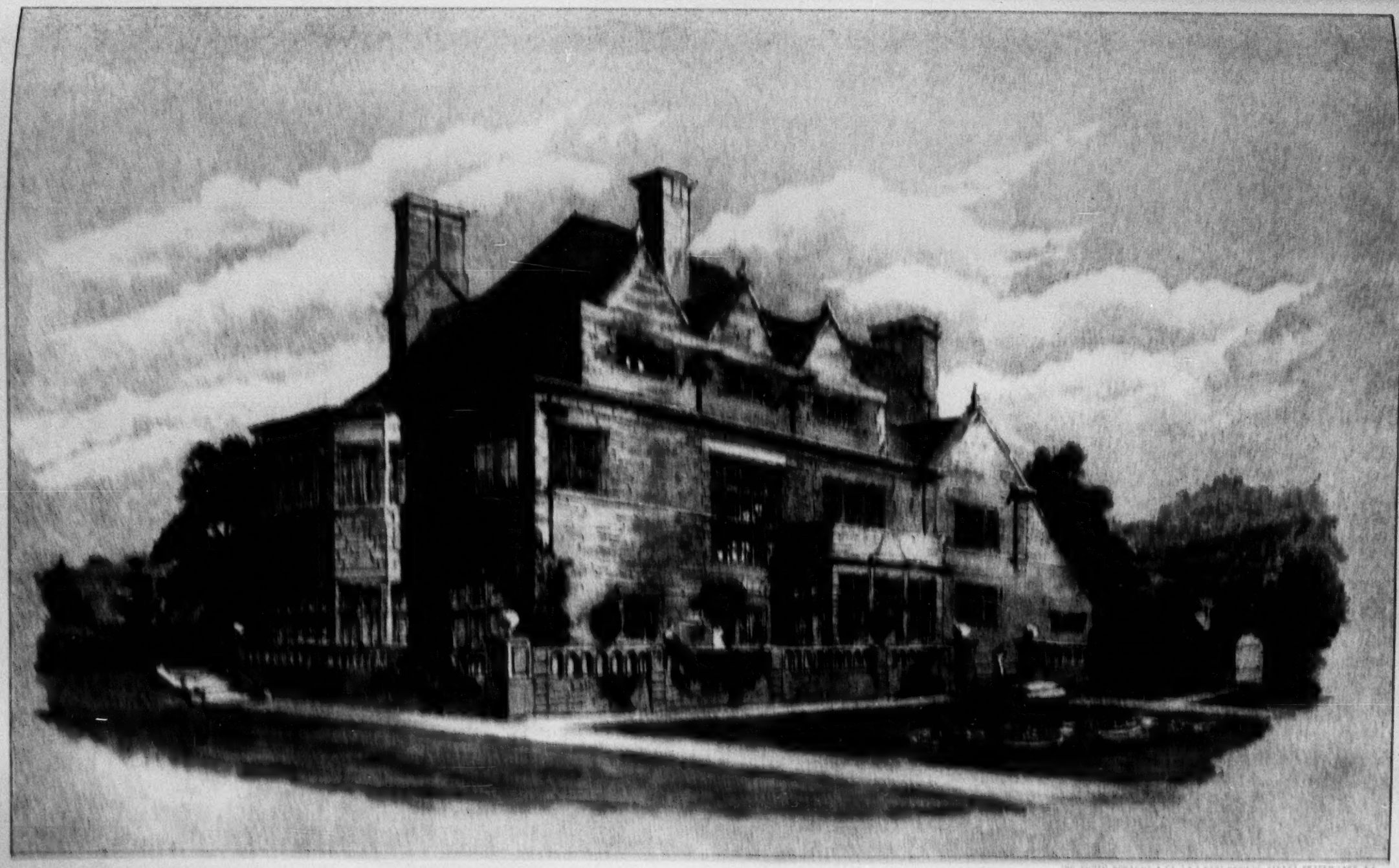
A TOWN HOUSE. BRISBANE. QUEENSLAND.





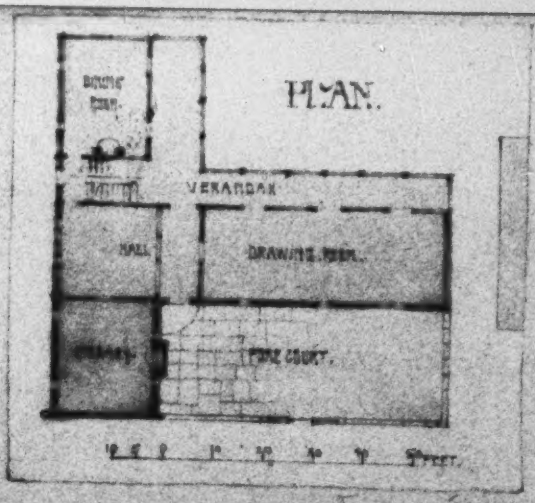
R. J. Rook.

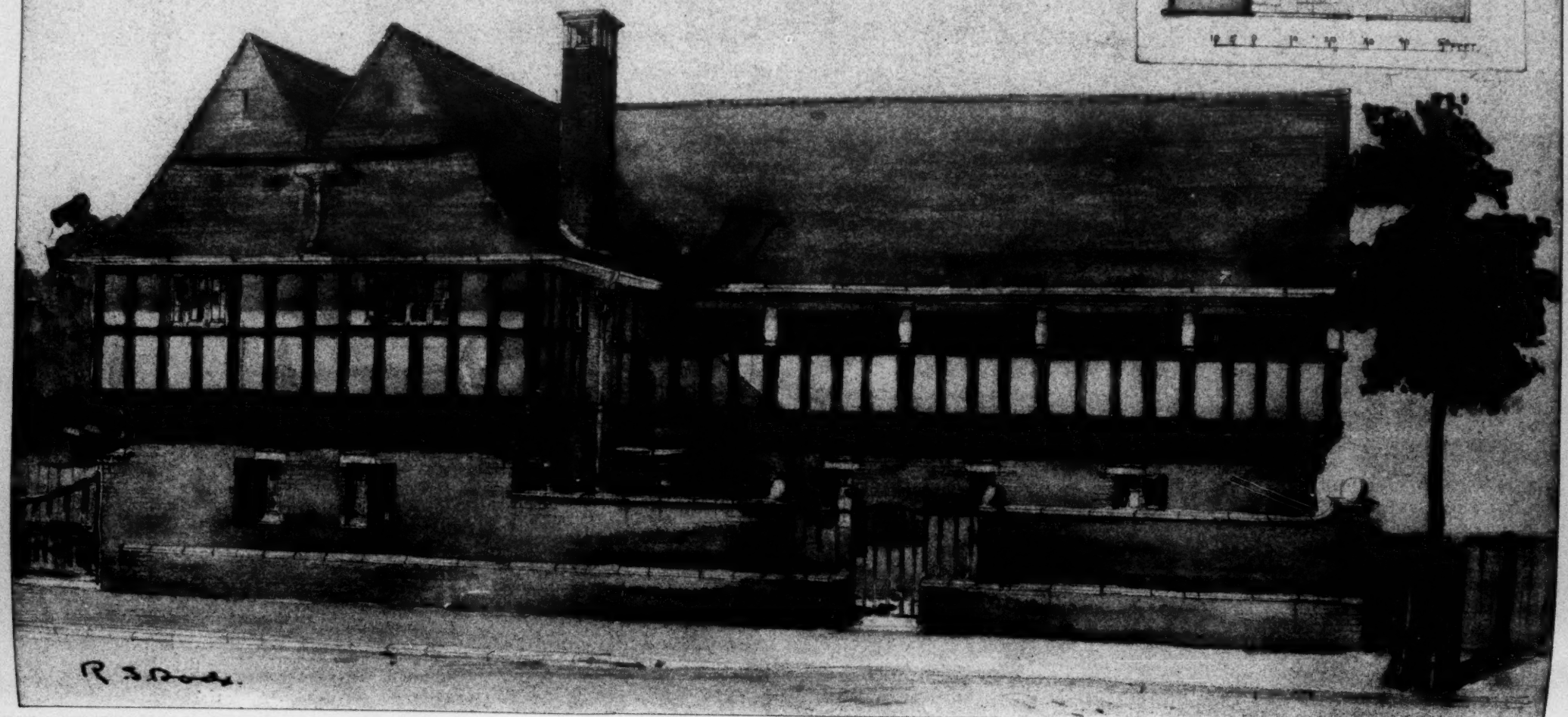
INK-PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



RECTORY, DONHEAD ST. ANDREW, SALISBURY.—MR. C. E. PONTING, F.R.I.B.A., ARCHITECT.

A TOWN HOUSE. BRISBANE. QUEENSLAND.





R. J. Beck.

INK-PHOTO SPRAGUE & Co. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

INK-PHOTO SPRAGUE & Co. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

RECTORY, DONHEAD ST. ANDREW, SALISBURY.—Mr. C. E. Ponting, F.S.A., Architect.

(*Continued from page* 303.)

a house in Crane, formerly Two Crane, court. That house, the home of Dr. Edward Browne, son of the author of "Religio Medici," had been bought at Sir Isaac Newton's instance for 1,450*l.* by the Royal Society, then at Gresham College, who held their first meeting there on November 8, 1710, and remained during seventy-two years. Wren adapted the interior for the Society and built the hall in which they met under Newton's presidency. He also built a library and museum at the rear, since called Newton Hall, on the garden of a house in Fleur de Lys-court which had belonged to the Barebone family. A fire on November 14, 1877, consumed the Scots Hall, and with it Zucchero's portrait of Mary Queen o' Scots and Wilkie's of William IV. Professor Donaldson rebuilt the Hall, 1879-80, his last architectural work. Mr. J. Macvicar Anderson, honorary architect to the Corporation, has prepared a scheme for rebuilding at the rear, utilising, for the Scots pensioners' chapel, Newton Hall wherein Coleridge gave his lectures on Shakespeare and which the London Positivist Society leased in 1881-1902.

NOTABILIA.

Fetter-lane—16, perhaps by W. Winde; "Here liv'd John Dryden the poet. . . . Glorious John" [January 24, 1891], pulled down 1887; Otway lived opposite. 32, Baxter's Chapel, since 1738 the Moravian Church (1457). 56, Magpie and Stump, where it is said E. Waller and N. Tomkins concocted their royalist plot in 1643; pulled down 1897. 88-90, White Horse, headquarters of the north-east, north-west, and Oxford coaches, latterly a licensed lodging-house, pulled down, with 1-12, Norwich-court, 1898; J. Pollard's view of the starting of the Cambridge Telegraph coach, 1824. Dr. T. Goodwin's Independent Chapel (1660) between 95 and 97: (old) *Spectator*, 494: pulled down June, 1890. London Parcel Delivery Company's depot, Rolls-buildings, 1886, and St. Dunstan's House [February 12, 1887] by W. S. Witherington (*ob.* 1898). Old fishing-tackle shops, and timbered and gabled houses, 94, the oldest, pulled down. *Nevill's-court*—J. Goslyng's drawn "plot," 1670, for Sir N. Bacon, ground landlord, of the extant garden-houses; 10, Moravian mission hostel, opposite the old Excise Office. *Dean-street*—all rebuilt; on the former doors were the brass dolphin knockers, seventeen in 1787, only one in 1869, at 6.

Chancery-lane—Premises at south-east corner [vol. for 1855, p. 389; Sir J. Knowles]: 47-8-9 [December 30, 1899] on Sir H. Bacon's estate; 47-8, Mr. Somers Clarke and Micklethwaite (*ob.* 1906); 49, H. C. Boyes (*ob.* 1900). *Bishop's-court*—All south and part of north side rebuilt 1891-2. *Chichester-rents*—The old Ship, the Sol's Arms of "Bleak House"; widened to 11 ft. by the Ecclesiastical Commissioners, 1895-6; "Temple Office," one of the six London post-offices, 1752. 80, Jessel-chambers, Waterman & Lewis, 1899; 92, Mr. G. D. Martin, 1897; 93-4, T. E. Knightley (*ob.* 1905); Union Bank of London (and Smiths), and Union Bank-chambers, Carey-street, 1864-5, F. W. Porter (*ob.* 1901); 115, site of Sir R. Fanshawe's house, Hunter & Stewart for Hodgson & Co., 1863. *Crown-court*—The quaint old houses, north side, pulled down 1890-1.

Crane-court—Newton's reputed chair of office preserved in the Scots Hall; a view of the interior of the Royal Society's hall in vol i. of Weld's "History of the Royal Society." 10, Palmer & Clayton first printed the *Illustrated London News*; in the opposite house were printed the early numbers of *Punch*; Dryden Leach, arrested upon suspicion of having printed Wilkes's *North Briton*, No. 45; the court was formerly paved with black and white marble; many of the houses have been rebuilt. The (Royal) Society of Arts, over a circulating library, 1754-5.

PROPOSED ASYLUM, GUERNSEY.—Sketch-plans have been prepared by Mr. G. T. Hine, architect, Westminster, for the new States Asylum, which it is proposed to erect on a site near St. Peter Port. According to this sketch-plan the asylum will be of two stories. The male occupants will occupy the ground floor and upper floor on one side of the building, and the females the corresponding floors on the opposite side. Each side exactly corresponds to the other, with similar accommodation as regards dormitories, day-rooms, etc. In the centre are the business offices, and in a separate arm of the building the kitchen, and servants' sleeping-rooms above. In addition to the day-rooms there is a large central hall and chapel immediately over the matron's-room and the business offices. The work is estimated to cost over 16,000*l.*

THE TRADE UNION CONGRESS.

THE forty-first Congress of Trade Unions recently held at Nottingham in point of numbers did not differ very materially from that held at Bath last year; 518 delegates attended as compared with 521, but the societies they represented showed an increase of about 70,000 members despite the secession of one or two unions, including the Amalgamated Society of Engineers. The subjects discussed at these meetings take a more political aspect year by year, but with that side of the proceedings at the Congress we have nothing to do in these pages. It is sufficient to say that this development must be expected to increase, since many of the trade unions have now pledged themselves to support the Labour Party in Parliament, whilst the Labour Party at the meeting held in Hull in January last, at which 181 trade unions were represented, pledged itself to have as a definite object "the socialisation of the means of production, distribution, and exchange, and the emancipation of labour from the domination of capitalism and landlordism." Moreover, the trade unions have now powers which enable them to further this object, since the parliamentary levy has been held to be within their powers, and a regulation that candidates for the representation of the unions in Parliament shall sign and accept the conditions of the Labour Party and be subject to their Whip has been held to be *intra vires*, and a matter affecting the internal policy of the unions with which the Courts will not interfere (see the *Builder*, August 8).

The resolutions relating to non-political matters were rather limited, but it is evident that the main planks of the trade union policy are to be the extension of the Old Age Pensions Act, and the passing of the Unemployed Workmen Bill which was thrown out last Session. The Congress also passed a resolution censuring those persons who had engaged themselves abroad where a strike was in progress, and recommending that the principles of the Foreign Enlistment Act should be applied to those seeking to organise labour in such circumstances; a policy put forward under a peaceful guise with the intention of furthering trade disputes.

In comparing old age pensions, which are granted on a non-contributory basis, with Civil Service pensions, to which the principle of deferred pay applies, the President used an argument the fallacy in which has been exposed over and over again; but he disclosed the fact that pressure would soon be brought to bear to extend a measure that has not even yet come into force. Sixty is the age now put forward as that at which a person shall be entitled to the receipt of State assistance, but it is evident that, were this demand to be granted to-morrow, agitation would soon arise to secure the age limit being lowered by a further decennial period. On the subject of unemployment, the President quoted from the *Labour Gazette* for August, citing the figures which we gave in the *Builder* for August 29, that in 268 unions with a membership of 646,511, 53,163, or 8·2 per cent., were reported as unemployed, but he omitted to carry the matter any further and to state, as was shown in our Note, that 35,903 of the above 53,163 workpeople reported as unemployed were unemployed by reason of trade disputes, and that 8,600 workpeople were out of employ owing to disputes having no connexion with rates of wages or hours of labour. These figures only relate to skilled labour.

The remedies pressed for by the Congress for unemployment were the old panacea of no overtime and a demand for the passing of the Unemployed Workmen Bill, a demand coupled on the part of some of the speakers with veiled threats which are much to be regretted, and which formed the only blot in the proceedings at this great Congress.

The time for speakers being very limited, too much cannot be expected from them, but it is noticeable that the same demands are made year by year without the least attempt being made on the part of those moving or seconding the resolutions to support them by argument. The Unemployed Workmen Bill affords an excellent example of this; it has been the subject of debate in the House of Commons, arguments of great weight have been brought to bear against it, yet we find the Trade Union Congress simply affirming the necessity of reintroducing it in the next Session. Such tactics having succeeded in the case of the Trade Disputes Act, possibly it is imagined that nowadays any object can be attained by mere persistence in asking for it. It will be remembered that clause 3 of this Bill provides that it shall be the duty of every local authority to provide work for any workman who has registered himself as unemployed, upon conditions not lower than those that are standard in the locality, and, failing the provision of work, to maintain him and his dependants. Apart from the impossibility of continuously inventing and maintaining relief works and the undesirability of creating undertakings for the sole object of making work, it will be remembered that the President of the Local Government Board, in the debate in the House of Commons, pointed out that the kind of work contemplated by this Bill was similar to the schemes which he was administering under the Unemployed Workmen Act, and that the relief works at Hollesley Bay where on an average 250 men were employed daily, had resulted in a net loss of 22,000*l.* a year; whilst at South Ockendon 790 men had passed through the labour colony at a cost of between 30 shillings and 32 shillings per week a man, and that, although the object of that colony was to train men for the land, there was not a recorded instance of a single man having returned to agricultural work. Mr. Burns further stated that the Bill had only received support from three town councils out of 322, sixteen urban district councils out of 818, and four rural district councils out of 671. It is hardly necessary to refer to Mr. Burns's observations on the effect the Bill would have on those in employment, for the strictures passed at the present Congress on the Salvation Army sufficiently illustrate the cogency of that argument, and the ill-feeling that would arise in connexion with local employment authorities.

When we come to ask what are the lessons to be learnt from the recent Congress we are reluctantly compelled to admit that the debates show but little of that sound common sense and that spirit of independence which has hitherto characterised the trade unions in the development of their schemes as sick and benefit societies.

All that has been done to alleviate the condition of the working classes, all the responses made to their demands—the Workmen's Compensation Acts, the Old Age Pensions Act, the Unemployed Workmen Act, the Factory Legislation, and such like measures—are either totally ignored or grudgingly recognised by the delegates at these Congresses, who propound no schemes for self-help, but simply exert their ingenuity in devising schemes for State assistance based on no known law of economics. One of the resolutions which was carried even went so far as to propose that the Government should make grants in aid to trade organisations which during "periods of slackness" support their members by the payment of out-of-work benefits, "periods of slackness" which, we presume, would include strikes. The usual resolutions relating to minimum wages and legal eight hours' days were passed, but resolutions advocating compulsory arbitration were lost.

It may well be asked if the cause of labour is in any way assisted by the extravagant theories annually put forward as forming part of the trade union policy. The trade unions have it in their power, by co-operating with the State, to perform very valuable functions and materially to benefit the classes which they are supposed to represent, but

their present attitude is one calculated to weary the self-supporting and self-respecting and to encourage pauperism and dependance in those who take no pains to render themselves efficient and who are unwilling to work. The years 1900 to 1907 marked a period of advanced wages and a reduction in working hours, and the President in his address admitted that working hours are less in this country than in either Germany or France; but if, as it is to be feared is the case, we are now entering upon a period of commercial depression, there can be little doubt that it can only be successfully encountered and overcome by a spirit of self-reliance and self-denial regrettably absent in the proceedings of the Trade Union Congress for 1908.

RAILWAY ACCIDENTS.

THE Board of Trade Report on railway accidents in the year 1907 has just been issued. The number of persons killed during the year by accidents due to the running of trains or the movement of railway vehicles was 1,117 persons, whilst 8,811 were injured from like causes. These figures compare respectively with 1,169 and 7,212 in 1906, showing a reduction of 52 in the fatal accidents, but an increase of 599 in the non-fatal accidents. The average figures for the previous ten years were 1,160 and 6,765. The figures were, however, disturbed by a Board of Trade order which came into force in 1907, by which all non-fatal accidents which cause an employee to be absent from work one ordinary day have to be reported, instead of accidents causing incapacity for five hours' work on any one of three days following the accident, the principle before applied, and this change has effected even the ten years' averages, for in 1906 the average was 1,144 fatal accidents and 6,631 non-fatal accidents. As regards accidents to railway servants (exclusive of train accidents), the proportion of casualties to the number of men employed in positions of danger showed considerable improvement, being 1 in 57 as against 1 in 71.

In 1906 thirty-nine passengers were killed in train accidents, but in 1907 only eighteen persons were so killed, of which the Shrewsbury accident accounted for ten. It would be most interesting if figures were procurable showing the number of persons killed whilst riding in motor-cars. The thirty years' average up to 1905 showed that only one railway passenger is killed in 40,488,487 journeys, and one injured in 1,224,545 journeys, but a reference to mileage is not obtainable. The railways, however, must compare very favourably with motor transit.

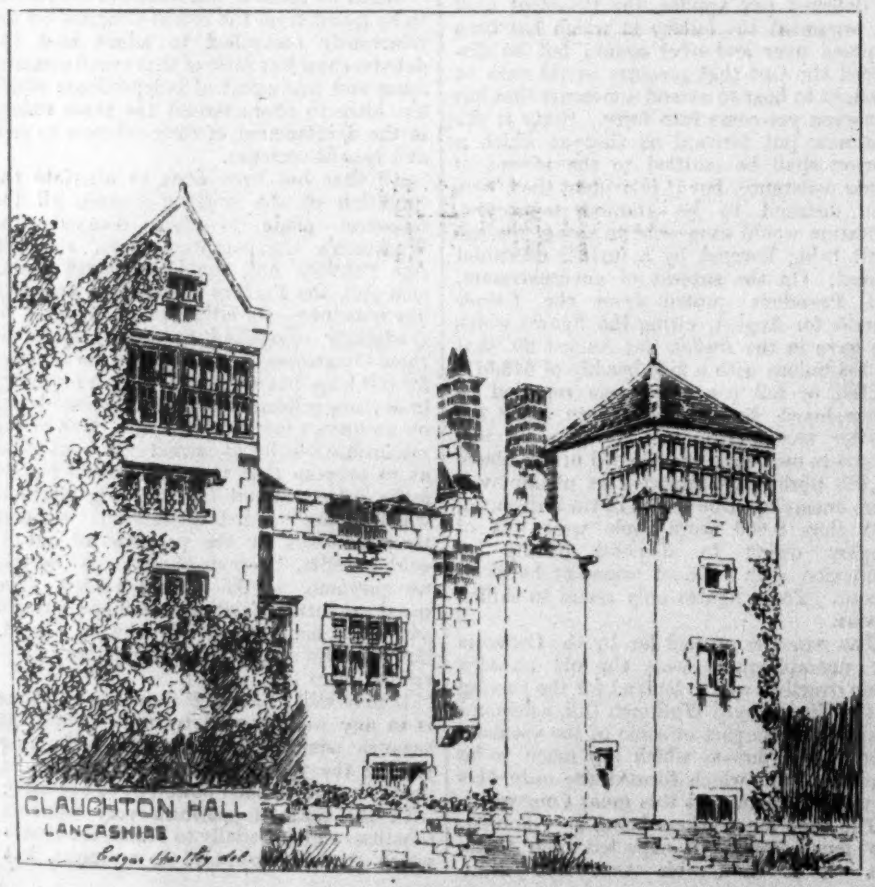
CLAUGHTON HALL, LANCASHIRE.

THIS old house is situate some miles south of Lancaster, and was once the seat of the Croft family.

In the neighbouring church is a bell dated 1296.

The drawing shows the Hall before being stripped of ivy, etc.

The illustration is from a sketch by Mr. E. Hartley of Liverpool.



Archæological Societies.

SUSSEX ARCHÆOLOGICAL SOCIETY.—This Society made their annual excursion last week. Mr. Philip M. Johnston, F.R.I.B.A., who acted in great measure as a guide to the party, gave a detailed description of the partially obliterated mural decorations at Hardham Church, and criticised the doings of certain vicars of Fittleworth of a past generation, who destroyed the symmetry of the beautiful Early English chancel for the sake of making room for an organ,* and who placed "bathroom" tiles as a dado round the chancel. The architectural and archæological points of Pulborough Church were next considered, where (as in many other cases) there is a XIIth century font considerably older than the church; and Hardham Church, in regard to which Mr. Johnston expressed the opinion that there was no more important church for paintings in England than this, for the completeness of the subjects, and the earliness of the date at which they were painted. He placed the work as far back as the XIIth century, and gave the Archæological Society credit for having done something to preserve this valuable memorial of Early English ecclesiastical art by commissioning him some years ago to size and varnish the walls. The nearly perfect pre-Conquest Church of Stopham was then visited, at which Mr. Johnston gave the date of the chancel and inner sanctuary at about 1050, and said there were painted windows of about 1310, while the chancel lights were probably of 1480. The brasses and windows in memory of members of the Barttelot family were the subject of special attention. Finally came Petworth Church, in which Mr. Johnston laid before the party much information supplied by Mr. Walter E. Tower, who carried out the recent restoration in conjunction with the late Mr. C. E. Kempe. Prior to 1825 the church was quite a small one, but it was then given its present proportions, lofty spire, and galleries, something like 16,000*l.* being spent upon the fabric.

CUMBERLAND AND WESTMORELAND ARCHÆOLOGICAL SOCIETY.—The Society last week made an excursion in North Westmoreland. The first place visited was Acorn Bank, Temple Sowerby; a house which had come down to the present owners from the Knights of St. John, who possessed the manor of Temple Sowerby; and thence the party proceeded to Newbiggin Hall. On the tower here are two stone effigies of knights in armour. The numerous gargoyles are moulded so as to imitate cannons—a feature to be found at several other places in the northern counties. The walls of the tower are 4½ ft. thick, and on the west side is a round gun-hole, splayed on the inside, for the placing of a small cannon, believed to be the only case of the kind in Cumberland and Westmoreland. Milburn Church was next visited; then Howgill Castle; and subsequently the churches of Kirkbythore and Bolton, at which latter is the curious carved slab representing two knights on horseback. A visit was afterwards made to the remains of Bewley Castle.

* This is, we are afraid, too much an example of the common foible of archæologists, who seem to think the modern uses of a church for worship are of little consequence in comparison with preserving its archæological completeness.—ED.

PROPOSED NEW BUILDINGS IN LONDON AND SUBURBS.

HOTEL, Berners-street and Castle-street, W. Mr. John Slater, architect, 46, Berners-street, W.; Messrs. Holloway Brothers, builders, Belvedere-road, Westminster Bridge.

Buildings, Hampstead-road, adjoining Euston-road, N.W. Messrs. Howell J. Williams, Ltd., builders, 11-17, Bermondsey-street, London Bridge.

Adaptation of premises in Staple Inn-buildings, Holborn, for occupation as branch of Capital and Counties Bank, 39, Threadneedle-street, E.C.

Six houses, Bollo-lane, Barnes. Mr. J. J. Fuller, builder, 63, Ivy-crescent, Chiswick, W.

Croydon.—Additions and alterations, Baptist chapel, Whitehorse-lane, Mr. E. Stones, architect, 1, Trump-street, Cheapside, E.C.; two houses and shops, Selhurst-road, Messrs. Dartnell & Banks, architects, 34, High-street, Croydon; twelve houses, Richmond-road, Mr. W. M. Lucas, 91, Brigstock-road, Croydon; additions to Whitehorse Laundry, Whitehorse-road, Mr. W. Hards, 19, Selsdon-road, Croydon; additions and alterations, 70, Weston-hill, Messrs. Macey & Sons, builders, 24, Essex-street, Strand, W.C.; six houses, Whitehorse-road, Mr. F. H. Milton, 76, Haslemere-road, Croydon; six houses, Barmouth-road, Mr. W. B. Coomber, 65, Pemdevan-road, Croydon; six houses, Melfort-road, Mr. C. Omerod, 5, Station-road, West Croydon; three shops and two houses, Brigstock-road, Mr. H. E. Davey, 20, Cassland-road, Croydon; stabling and sheds, Gillett-road, Mr. W. Whitehouse, 33, Gillett-road, Croydon; four houses, Strathyre-avenue, Messrs. W. G. Allen & Son, Tunstall-road, Croydon; four houses, Lower Addiscombe-road, Mr. C. Carpenter, Lower Addiscombe-road, Croydon; additions, St. James's Vicarage, Tavistock-road, Messrs. Umlandt & Gibson, builders, 98, Cherry Orchard-road, Croydon.

Barnet.—Fittings, etc., for new hospital, also roads, Mr. A. E. Pill, architect, care of Mr. G. D. Byfield, Clerk, Barnet Isolation Hospital Committtee; completion of St. John's Church, Rev. E. J. Hall, rector, Friern Barnet.

Hemel Hempstead.—Additions and alterations to Lockers Park College, for Mr. P. Christopherson; two houses, West Valley-road,

for Messrs. Rees & Hicks; two houses, Fishery-road, for Mr. N. Micklem, M.P., K.C., Boxmoor, Herts; additions to "The Poplars," for Rev. Mother Superior.

New church, East-lane, Wembley. The Vicar, Wembley.

Phthisis ward in connexion with Hendon Workhouse Infirmary, Mr. F. J. Seabrook, Clerk to the Guardians.

Six villas, Percy-road, Hampton. Messrs. Milestone & Collis, estate agents, High-street, Teddington.

Deptford.—Stone building, Frankham-street, Mr. J. Morton; shops, Foxberry-road, Messrs. Webster & Forbes, on behalf of trustees of the late Mr. James Martin; additions to factory, Thurndley's-road, Mr. G. Parker, builder, 124, Sumner-road, Peckham, S.E.

West Ham.—Alterations in schools to provide handicraft instruction, Mr. Wm. Jacques, architect, 2, Fen-court, Fenchurch-street, E.C.; day training college, 250 places (negotiations for erection proceeding between West Ham and Essex County Council Education Committees. Secretaries, F. E. Hilleary, West Ham; J. H. Nicholas, Chelmsford).

METROPOLITAN ASYLUMS BOARD.

At the sitting of the Metropolitan Asylums Board on Saturday communications were received from the Local Government Board consenting to alterations to the medical superintendent's house at the Eastern Hospital; assenting to the proposal to cover in a portion of the yard at the Mead Ambulance Station at a cost of 310*l.*; agreeing to an expenditure of 2,340*l.* for the provision of additional staff accommodation at the Eastern Hospital; stating that with respect to the proposed provision of additional accommodation for patients at the Eastern Hospital they will defer sanctioning expenditure until they are furnished with a complete estimate of the cost based on the accepted tender.

Belmont Asylum.—The Works Committee reported that 5,728*l.* had been expended at present on the alterations and repairs to Belmont Asylum, on which the Local Government Board had sanctioned an expenditure of 10,140*l.*

Tenders. — The following tenders were accepted:—Messrs. H. King & Son (249*l.*), for erection of wall and other works at Solomon's-passage, Peckham Rye; Messrs. Babcock & Willcox, Ltd. (2,690*l.*), for the installation of new boilers at Darenth Asylum; F. W. Jarvis (245*l.*), for cleaning and painting works at High Wood School; Messrs. J. Garvie & Sons (1,348*l.*), for joinery fittings at the Southern Hospital; and Messrs. Johnson & Phillips, Ltd. (302*l.*), for installation of storage battery, etc., on the training ship *Exmouth*.

Trade Catalogues.

THE ARMOURED TUBULAR FLOORING COMPANY send us a pamphlet describing their system of reinforced-concrete floor construction. This floor consists of three parts:—(1) Concrete webs, in the lower part of which a corrugated steel bar of special design is embedded; (2) light, hollow tubes, 9 in. long, of coke-breeze concrete; and (3) a layer of concrete which, like that in the webs, is made of suitable aggregate and Portland cement in the proportions of 3½ to 1. The webs and tubes are made at the company's works in advance, and so are duly seasoned when delivered on the site, enabling the floor to be assembled in a minimum space of time. The webs are first laid in position, the tubes are put between them, and the covering layer of concrete is then spread over the whole series. A useful feature of the pamphlet is a clear statement of the formulæ employed by the patentees for calculating the resistance of floors built on their system. One important advantage claimed for the flooring described is that it can be laid without necessitating the employment of centring or timber moulds of any kind.

We have received from the Sunbeam Lamp Company, of Park-road, Gateshead, a leaflet describing the "Sunbeam Metal" lamp. The metal used for the filament is tungsten, and the guaranteed efficiency is almost a candle per watt, and is three times higher than that of the ordinary carbon lamp. The price of the metallic filament lamps is about three times dearer than the price of carbon lamps, but as their life is practically the same the saving in the meter bill far more than compensates for the increased expense. A drawback to their use is that at 200 volts the lowest unit quoted is 50 candle-power. The company manufacture special lamp adapters so that the lamps can be run two in series, and hence cheaper and more robust metallic filament lamps can be used. They also make 8-candle-power carbon lamps for high voltages.

Messrs. Thos. Gabriel & Sons, shippers of Australian timbers, send us a finely illustrated pamphlet describing the room which has been set up at the Franco-British Exhibition to demonstrate the practical application of the woods of Australia for furniture and joinery. The room, which has been made and fitted up by Messrs. G. Trollope & Colls & Sons, shows the use of *Black-Bean*, an ornamental wood, of a warm brown colour, in appearance not unlike walnut; *White Beech*, similar in colour to the English lime tree, said to be excellent for carvers, owing to its superiority as regards texture and ease in working; *Silky Oak*, a wood of small figure, and very suitable for small furniture; *Rosewood*, not unlike mahogany, durable, and of good figure; and *Spotted Gum*, recommended as an excellent wood for flooring, and suitable for building purposes. The carved work on the panelling of the room is of white beech, and represents the fruits and flowers of the Colony. The carving in itself is very good, but it is badly applied, looking too much like *appliqué* work unconnected with the structure or the architectural design. As an illustration of the decorative quality of Australian woods, however, the room and the furniture are worth attention.

BOOKS RECEIVED.

CORSTOPITUM: REPORT OF THE EXCAVATIONS IN 1907. (Andrew Reid & Co., Newcastle-on-Tyne.)

WANDERINGS IN PICCADILLY AND MAYFAIR. By E. Beresford Chancellor, M.A. (Alston Rivers, Ltd. 2s. 6d.)

THE CATHEDRALS AND CHURCHES OF NORWAY, SWEDEN, AND DENMARK. By T. Francis Bumpus. (T. Werner Laurie. 16s.)

MENSURATION MADE EASY; OR, THE DECIMAL SYSTEM FOR THE MILLION. By Chas. Hoare. Twenty-fourth edition. (Effingham Wilson. 1s.)

THE VENTILATION OF PUBLIC SEWERS. By John S. Brodie. (The St. Bride's Press. 6s.)

Correspondence.

FIRE-RESISTING AGGREGATES.

SIR,—In February last a fire occurred in a steel skeleton frame, reinforced-concrete building in Ohio. The fire was very fierce, but, owing to the fireproof construction, it was confined to one floor, and little or no damage was done to any other part of the building. The surface of the concrete where the fire was most fierce was slightly damaged. Seeing that there is some doubt as to what constitutes a really good fire-resisting aggregate, and that the concrete used in the Dayton building had stood so severe a test, I wrote to the Trussed Concrete Steel Company asking (if they were disposed to give it) what were the constituents of the concrete. The following is an extract from their reply:—

"In regard to the concrete used in the structure, this was a 1:2:4 mixture—one part Portland cement, two parts sand, and four parts broken stone. The stone was, we believe, of limestone formation. We personally favour the use of broken stone or clean gravel in connexion with concrete structures, in preference to cinders, although we have known cases where the latter material has been used with success."

Success, I presume, with regard to the resistance of fire, for the corrosion of the steel bars in coke-breeze concrete (as you pointed out in your issue of December 8, 1906) puts it quite out of court as an aggregate for reinforced concrete, until some inexpensive means is devised by which the sulphur in the coke-breeze can be eliminated. From the Trussed Concrete Steel Company not being quite sure as to what sort of stone was used, I gather that they do not attach very much importance to this question.

Limestone is usually supposed to be about the worst fire-resisting aggregate that can be used for concrete, because of itself it crumbles away when subjected to a very fierce fire. Next in capacity to withstand fire is said to be concrete formed of shingle or Thames ballast, and next that composed of burnt clay; coke-breeze is said to be the best of all in this respect. Possibly the reason that an aggregate of cinders (which of themselves will burn to a white heat) makes a good fire-resisting material is that when made up into concrete it is a compact and solid mass, one-fifth of which is composed of Portland cement.

Perhaps the same reason will apply also to limestone when broken up into small pieces and combined with sand and cement.

C. F. M.

*** As our correspondent suggests, it is by no means improbable that the fire-resistance of cinder concrete may be due mainly to the efficient protection afforded by an ample coating of Portland cement, a material which may sometimes preserve limestone concrete from serious injury in a fire. But it must be remembered that limestone concrete is also affected very much by the weather. Burnt clay and cinders make weak concrete; cinders are inadmissible in reinforced concrete work because of the sulphur they contain; and limestone, being liable to disintegrate under the action of fire, air, and water, is equally inadmissible. For strength, durability, and fire-resistance there is no aggregate to compare with gravel or hard and gritty qualities of stone, free from lime and other alkaline earths.—ED.

THE PATENTS AND DESIGNS ACT.

SIR,—In his somewhat discourteous letter Mr. J. Kennard states, *à propos* of the reason of inventors working their patents abroad:—"Is it not really to prevent the article patented from being made here and thereby competing with the manufacturer in his own country?" And further, "But unless secured by foreign patents he" (the foreign patentee) "may find his goods undersold both at home and abroad." Mr. Kennard here contends that a person holding, say, a German patent takes out a patent in this country in order to prevent British competition in Germany, where, as patentee, he holds the sole monopoly of manufacture. Further comment on this point is needless.

The real reason of a foreign patentee taking out a British patent is simply to secure the British market. In pursuance of his own interests he will, in the ordinary course of business, manufacture his article in that country in which it can be produced more cheaply. As, however, the new Act compels him (with some minor qualifications) to manufacture it here irrespective of the cost, he, as holder of the monopoly of sale, will be in an advantageous position as regards charging the British users with the extra cost thus incurred. Doubtless there are a few cases where British patents are taken out and the goods not sold here; but, as before explained, as the only reason for taking out a British patent is to secure the British market, such cases would be limited to those in which the patentee deems the market to be too small to exploit; in any case, the cases are quantitatively negligible.

In referring to the British goods exported in payment of the foreign goods imported, I was referring, as Mr. Kennard should have been aware, to the payment for those foreign goods which, *ex hypothesi*, are more cheaply manufactured abroad. I neither did nor do contend that we should decline to make any class of goods in competition with foreigners; but I do believe that if the State forces industries to be established in this country by tariffs, as in Protection, or by prohibition, as in the new Patents Act, such industries are injurious to the country as a whole.

With regard to Mr. Kennard's statement that a patent of monopoly is Protection, permit me to give it unqualified contradiction. If Mr. Kennard invented, for instance, a new wood-working machine, and could not obtain patent rights, any other person so disposed could appropriate his idea and manufacture the machines in competition with him. Mr. Kennard would doubtless object, quite rightly, to this, inasmuch as everyone else would have as much right (possibly very much more if possessed of more capital than he) to his invention as he has. The "protection" afforded to Mr. Kennard by the patent laws would therefore be similar to that afforded to every householder against the depredations of burglars. To confuse this kind of protection with that afforded to manufacturers by tariffs is radically to misapprehend the whole question.

Regarding the "enormous popularity" of the new Act, I would point out that the counting of heads is not necessarily the best criterion as to the wisdom or otherwise of the measure.

J. A. GLAZIER.

*** We cannot continue this correspondence further.—ED.

General Building News.

U.F. CHURCH, KINGUSSIE.—The foundation-stone was recently laid at Kingussie of a U.F. church. The new church has been designed by Mr. Alexander Cattanach, architect, Kingussie. It is seated for about 400, and when completed will cost nearly 3,000*l.* The mason contractors are Messrs. J. & D. Macdonald, Newtonmore; carpenters, Messrs. D. & M. Fraser; plasterers, Messrs. D. & L. Macpherson; slater, Mr. A. Falconer; plumber, Mr. A. Cattanach; painter and decorator, Mr. D. Chissolm, all of Kingussie.

CHURCH IMPROVEMENTS, MOUNTSORREL. — Various improvements have been carried out at Christ Church, Mountsorrel. A wood-block floor has been laid down in the body of the church. The old pews have been replaced by

oak seats. A heating apparatus has been installed, and a new font has been erected. The contractors for the heating chamber and new block floor were Messrs. Scurr, Jowett, & Co., of Barrow-on-Soar; for the heating apparatus, Mr. D. Poppleton, of Leicester; and for the seats, the Bennet Furnishing Company, of London and Glasgow. The font was supplied by Messrs. Jones & Willis, of Birmingham. The entire work was carried out under the supervision of Mr. J. F. J. Goodacre, architect, of Leicester.

WREXHAM CHURCH EXTENSION. — Messrs. Prothero, Phillott, & Barnard have been appointed architects to the Wrexham Church extension scheme, which is to include a church-house and institute, a school church, and two new churches in outlying parts of the town. The same firm restored the parish church, and have recently rehung the bells.

NEW CHURCH, GLASGOW.—A new church has been erected in Woodlands-road, Glasgow, in connexion with the Church of the New Jerusalem. The building is of stone, and has a red-tiled roof. Messrs. J. & D. Barclay, Glasgow, were the architects.

REBUILDING OF CHURCH TOWER, OVERTON, HANTS.—The tower of Overton Church is being rebuilt from the designs of Messrs. Cancellor & Hill, architects. The work is being carried out by Mr. Kersley, a local builder.

TRURO CATHEDRAL SCHOOL.—Work has been begun on the erection of the new buildings for the Cathedral School in the Cathedral Close. The designs were drawn by Mr. F. L. Pearson.

LONDON COUNTY COUNCIL CENTRAL SCHOOL OF ARTS AND CRAFTS.—This building, which has just been completed, has a frontage to Southampton-row of 106 ft. 9 in., and to Theobald's-road and Paxton-street of 106 ft. 6 in., and contains a basement and six other stories, which together give a floor space of about 74,000 sq. ft. In the basement are the rooms for the heavy work, comprising leadwork, stonework, ironwork, metal-casting, etc., the principal lavatory for the students, and the boilers for the heating system, which is common to this building and to the training college. On the ground floor are the administrative offices, staff-rooms, common-rooms for the students, classerooms for architecture and wood-carving, and the central hall, which is lighted by a dome. A lecture theatre to accommodate 300 is situated on the corresponding floor in the training college; it is directly accessible from the school, and is intended to be used jointly by both departments. On the first floor are the classrooms and workshops for goldsmiths' and silversmiths' work and allied crafts, including chasing and *repoussé*, modelling, engraving, and die-sinking. On the second floor are the classrooms for the arts and crafts in connexion with book production, namely, illuminating, typography, lithography, wood-engraving, and book-binding. On the third floor are the rooms devoted to the arts and crafts connected with cabinet work and furniture, namely, drawing and design, cabinet-making, polishing, and upholstery. On the fourth and fifth floors are the studios, classrooms and workshops which require special consideration in their lighting, viz., those for life-drawing, painting, modelling, stained glass, decorative plaster, embroidery, and weaving. Accommodation is provided for about 900 students at one time, and special arrangements have been made for adequate means of escape in case of fire, and the general construction of the building is fire-resisting throughout. The façades to the streets are of Cornish granite from the Colcerrow quarries, and Portland stone. The entrance and central hall are paved with Hopton wood stone. The building has been carried out by the Works Committee of the Council under the immediate direction of Mr. G. W. Humphreys, the Council's Manager of Works, from the designs of Mr. W. E. Riley, the Architect to the Council. The work in connexion with the heating and electrical equipment has been carried out under the supervision of Mr. Maurice Fitzmaurice, the Council's Chief Engineer. The electrical energy for both lighting and power purposes is supplied by means of two distinct services, and in the event of the failure of either of these an automatic switch will bring the other into use. Inverted arc lamps have been largely installed, and incandescent lamps, where used, are of the metallic filament type. Electrical energy also drives the two large exhaust fans which deal with the ventilation of the building, and a goods-lift for serving each floor. Fire alarms have been fitted throughout the building, and a system of electric clocks on the Magneta system is provided for the principal rooms. Provision is also made in some of the classrooms for the use of electrical power for the purpose of driving mechanical tools, heating small furnaces, etc. The heating apparatus consists of radiators heated by low-pressure steam on the vacuum system, fresh air being taken in through the outer walls and warmed before entering the rooms. Each radiator is separately controlled. The steam is raised by two large multitubular boilers of the Cornish type placed in the basement. The equipment of the building, other than permanent fittings, has been selected by Mr. R. Blair, the Council's Executive Officer. The school is under the direction of Professor W. R. Lethaby, and it will reopen on Monday, September 21. An illustration and plans of the building were given in our issue for May 16 of this year.

GRAMMAR SCHOOL, WIRKSWORTH.—The opening recently took place of the new grammar school which has been erected at Wirksworth. The school has accommodation for ninety students, and has cost about 4,500*l*. The plans were drawn by Mr. Widdowes, of Derby, and the contractors were Messrs. G. W. Walker, of Wirksworth.

PROPOSED SCHOOL ENLARGEMENT, BLAIRGOWRIE.—The Blairgowrie School Board have under consideration a scheme for the enlargement of their school at Blairgowrie. Plans for the proposed extension have been prepared by Messrs. D. & J. R. M'Millan, architects, Aberdeen.

ELEMENTARY SCHOOLS, NORTH SHIELDS.—The first section of the new elementary schools built in Preston-avenue, North Shields, by the Tynemouth Education Committee, has been opened. The schools, to be known as the King Edward Elementary Schools, will, when completed, provide accommodation for 1,360 scholars—namely, 480 each in the boys' and girls' departments, and 400 in the infants' departments. Mr. Marshall, architect, has prepared the designs.

COUNCIL SCHOOLS, SCOTSWOOD, NORTHUMBERLAND.—New schools have just been completed for the Newcastle Education Committee at the corner of Denton-road and Armstrong-road, Scotswood. The schools are in three departments, *i.e.*, senior boys and girls, junior boys and girls, and infants, the infants' school being a separate block. Accommodation is provided for 1,080 children. The schools are built of red brick, with stone dressings. The ground floor is laid with maple-wood block flooring on concrete, and the first floor with maple flooring. The internal stairs are of solid oak, and the whole of the internal walls have a dado of glazed bricks. The main roofs of the schools and the caretaker's house are covered with green Welsh slates, the flat roofs to playsheds being vulcanite. The buildings are heated throughout with hot water, and are lighted with gas. The work has been carried out by Messrs. Veitch & Jordan, contractors, Newcastle-on-Tyne, from the designs and under the supervision of Messrs. Watson & Curry, architects, Newcastle-on-Tyne.

COUNCIL SCHOOLS, WATCHET.—New schools have been erected at Watchet by the Somerset Education Committee at a cost of 3,072*l*. They were designed by Mr. T. H. Andrew, of the firm of Messrs. Andrew & Hosegood, Williton, and Mr. H. W. Pollard, of Bridgwater, carried out the building. The schools will accommodate 210 chidren.

MUNICIPAL COLLEGE, PORTSMOUTH.—On the 10th inst. the Portsmouth Municipal College, which has been erected at a cost of about 110,000*l*., was opened. The buildings stand on the site formerly known as the Mayor's Lawn, and form a central block, with a wing on either side. The south wing, which faces Park-road and is set back to leave an area 5 ft. wide, has a frontage of 156 ft. The east wing, facing the town hall, is set back 30 ft., and has a frontage of 135 ft., and the centre block is 47 ft. wide. The building is four stories in height at the front, and five stories high at the back, and is 64 ft. wide throughout, divided into two sets of rooms, one at the front and the other at the back, with a central corridor 8 ft. wide running from end to end, the principal staircase being placed in the centre and an additional staircase at each end. The height of the basement story is 14 ft., the ground and first floors 15 ft., the second floor 21 ft. to the centre of the ceiling, and the third floor 22 ft. The basement is mainly devoted to the engine-rooms, workshops, steam, and electrical laboratories. The ground floor is devoted principally to the offices and a few classrooms, together with the first of six lecture theatres. On the first floor is a suite of rooms for the mathematics, physical, and electrical engineering department, fitted with the requisite apparatus for preparing the students for the various examinations. Here, too, are the classrooms necessitated by the requirements of the Board of Education for the day training college purposes. There is, besides, a large examination hall, extending through two floors. On the second floor is a suite of rooms for the study of chemistry. There is also a suite of drawing offices for civil and mechanical engineering, adapted for the most advanced work in the profession. The third floor, the topmost of the building, is exclusively devoted to theoretical and applied art. In the centre of the building rises the tower, 140 ft. high, finished with a copper dome and ship finial. The rooms in the tower are used for design purposes, and also for painters and decorators. A master's-room is provided at each floor, and storerooms on the upper floors. Lavatory and cloakroom accommodation is arranged in mezzanine floors on either side of the principal staircase. A room is also provided for lady students. The caretaker's rooms are arranged at the west end of the building, and a coalhouse and cart entrance at the back. A bicycle house is provided under the steps leading to the library, a slope being arranged in the area for the same. The building is of fireproof construction, the floors of steel joists and concrete, staircases of granolithic stone, and roof constructed with steel framing. The front elevation is in Portland stone, the back elevation being finished in red brick with Portland stone dressings; the roofs are slated. The general finishing of the building internally is with glazed tile dadoes and plastered walls, the principal rooms and staircases being finished with pitch-pine panelled dadoes. The floors throughout are of pitch-pine wood blocks. The erection of the building has been carried out by Messrs. Armitage & Hodgson, of Leeds. The fitting-up of the library was entrusted to Messrs. G. Baron, Ltd., of Nottingham; the electric wiring to Messrs. Vaughan & Cook, of London; the wrought ironwork to Messrs. Hardham Powell, of Birmingham; and the ventilation and heating system of the building has been carried out by the Sturtevant Engineering Company, of London. Mr. George Edwin Smith was the architect, his designs being selected in a competition by Mr. A. W. S. Cross, who acted as assessor.

DUNDEE BUILDING TRADE.—The prospects of Dundee building trades for the coming winter, says the *Dundee Advertiser*, though not so rosy as might be wished, are at least as good as, if not better than, they have been at this time for a year or two. Most of the work for the coming winter will be on buildings of a public or commercial character. A considerable number of workmen will be employed on the construction of the Technical Institution in Bell-street, which will be pushed forward with all dispatch, while there is yet a good deal of building to take place in connexion with the extensions at University College, including the Physics Laboratory and the Peters Electrical Laboratory. There is also the completion of the new electrical power-station at Stannergate. Offers have been taken in for the new school at Dens-road, and it is hoped that soon after the November term a start will be made with the new central reading-room in Ward-road. Extensions which have been in progress at Belmont Works, Hawkhill, are approaching completion, and it is stated that additions are soon to be made to Grove Mill.

BUSINESS PREMISES, BOLTON.—New premises have been erected for Messrs. Adamson & Barlow, clothiers, in Oxford-street, Bolton. The building is of three stories, and has terra-cotta elevations. The architects were Messrs. Thos. E. Smith & Son, and the contractors Messrs. J. C. & F. Woods. The sub-contracts were carried out by the following local firms:—Structural steelwork, Messrs. John Booth & Sons; plumbing, glazing, etc., Messrs. R. Cuerden & Sons; slating, Mr. J. Hodson; electric lighting, Mr. T. A. Locke; heating apparatus, Mr. John Crook; and plastering and decorating, Mr. Hiram Jones.

DRURY-LANE THEATRE.—The rebuilding of the stage destroyed by fire on March 25 has been under the supervision of Mr. Philip E. Pilditch, the architect to the theatre and to the Bedford Estate, on which the theatre stands. The general contractors are Messrs. Dove Brothers, Ltd. The steelwork contractors are Messrs. R. Moreland & Son, Ltd. The automatic scenery appliances by Messrs. Bullivant & Co., Ltd. Ten thousand feet of teak, specially imported from Burmah, were used in the new stage floor. The new roof is 20 ft. higher than the old one, and is constructed of steel trusses 10 ft. high and 90 ft. long, and was hoisted in separate pieces and built up and riveted in position on the roof. The old timber roof had stood for 100 years, and was as sound at the date of the fire as when first constructed. It would be probably impossible to reconstruct a new roof on the same lines as the old one, as no timber is imported in such large sizes. The upper parts of the walls surrounding the stage are over 3 ft. thick in places. The rebuilding operations have resulted in a stage nearly double the size of the old one, some of the internal walls which were damaged by the fire not having been replaced. The fly galleries, from which the scenery is worked, have a total length of about 250 ft., and are also constructed in steel, which, like the roof, was hoisted into position in small pieces, and riveted up in position about 30 ft. above the stage. The limelight galleries, from which the lighting effects are given, have a total

length of nearly 200 ft., and are hung down from the fly galleries above them. The side walls of the theatre are covered with iron guides on which the counterweights which work the scenery battens are fixed. Although the old fire-resisting curtain stood so well and practically saved the auditorium of the theatre from destruction when the fire broke out, the new curtain, which is placed above the opening, has been designed with improvements, including the buffers to insure it descending gradually and evenly, and stopping without any jar, and the water sprinkler, which is placed immediately behind the curtain, so that in the event of a fire it automatically discharges a continuous stream of water on the back of the curtain to keep it cool. The new electric installation on the stage has been carried out under the supervision of Mr. Adrian Collins, the consulting engineer to the theatre.

POLICE-STATION, WALKER, NEWCASTLE-UPON-TYNE.—A new police-station has been erected at Walker by the Newcastle Corporation. The total area of the site is 2,900 sq. yds., of which the police-station covers 1,270 sq. yds., the remainder of the site being reserved for a proposed fire-station. The main front is in stone up to the second floor level, and above this and all the other elevations are in red-pressed brick with stone dressings. The roofs are slated with Newfoundland green slates. The floors and ceilings are of Portland cement concrete, reinforced where necessary with expanded metal. The walls are in a salt-glazed brick 5 ft. high, the remainder being in a white-glazed brick. The entrance-halls and lavatories on the ground floor are tiled, and the remainder of this floor cement and wood block. The remaining floors are of redwood joists and flooring boards. The lavatories and drying-room are of coloured cement. The lighting is by electricity. The cost of the building amounts to 9,000*l*. The contractors for the building are Messrs. Kirk & Brown, Mr. Thomas Bell acting as clerk of works. The work has been carried out under the direction and superintendence of the architect, Mr. F. H. Holford, Property Surveyor to the Newcastle Corporation.

ORPHAN HOMES, PANNAL ASH.—A pair of orphan homes (the first of twelve) erected at Pannal Ash for the Primitive Methodist Connexion have been opened. Each home provides accommodation for twelve children, or a total of twenty-four. The contractors for the various trades were as follows:—Excavating, drainage, brickwork, and masonry, Messrs. C. Dawson & Son, Harrogate; carpenters' and joiners' work, Messrs. Watson & Hayhurst, Harrogate; roof tiling, Mr. Jos. Shepherd, Harrogate; plumbing and glazing, Mr. Chas. Foster, Harrogate; plastering and concreting, painting, Mr. G. H. Marshall, Harrogate. Messrs. Roger Oldham and Thos. J. Hill, of Manchester, are the architects. The pair of homes just opened have cost 1,750*l*.

PETTY SESSIONAL COURT, GLOUCESTER.—A new Petty Sessional Court has been built at Gloucester, adjoining the police-station in Bearland. The new Court consists of a Court-house, 40 ft. by 22 ft., an entrance hall, witnesses' waiting-rooms, and magistrates' room. The building is faced with Cattybrook bricks, with dressings of Doulting stone. The joiners' work throughout is of well-selected wainscot oak. The building will be warmed by steam from boilers at the Shire Hall, supplemented by open fires. The steam heating has been carried out by Messrs. Ashwell & Nesbit, of Leicester. The building has been erected by Messrs. A. Estcourt & Sons, of Gloucester, from designs of Mr. M. H. Medland, County Architect. Mr. William Wiggall has acted as clerk of works.

Sanitary and Engineering News.

TRAMWAY BRAKES.—The fatal tramway accident in Birmingham last year has had the effect of inducing the Corporation to search for the most reliable type of brake hitherto introduced. An electro-mechanical device of the kind recently tested by the Birmingham Tramway Committee—the invention of Mr. A. W. Maley, an engineer formerly connected with the Tramway Department of the Leeds Corporation—appears to be capable of stopping runaway cars in a satisfactory manner. The danger of skidding wheels is obviated by the use of blocks acting on the rails. An electro-magnetic block on each rail is brought into action by current generated in the motors when operated as dynamos by the car wheels during the descent of a hill, or on level ground before a stop is to be made, and in addition there are two slipper brakes on each rail. The magnets can be excited alternatively by current drawn from the main conductor, and the brakes can be applied by hand in case the supply of electricity should be interrupted from any cause. One very severe test to which the new system was subjected in Birmingham was the application of the brakes on a car while running down a gradient at the speed of twenty-seven miles an hour. Although the rails were greasy from rain that had recently fallen, the car was pulled up at the distance of some 80 yds. beyond the point at which the brakes were applied. This seems to be a sufficiently convincing test, and we hope that the merits of the apparatus may be taken into consideration by the tramway authorities of various hilly towns where cars often get out of control.

HOUSING IN BEDFORDSHIRE.—The Consulting Medical Officer of Health for Bedfordshire, Dr. Geo. Newman, in his annual Report, insists upon the importance of regular inspection of house property, and remarks that, although in Bedfordshire inspection is, by some authorities, at all events, more or less regularly carried out, a great deal remains to be done in the matter, for insanitary conditions exist throughout the county. The question is touched upon by the district medical officers of health in their reports. Bedford, on the whole, is said to be remarkably free from slum districts, but there are certain small areas which should, if and when occasion occurs, be improved. The housing accommodation at Biggleswade varies in different parts of the town. There are a considerable number of cottages which are unsatisfactory; the roofs and walls need repair, there is an absence of guttering and damp-proof courses in some, the floors are unventilated beneath, the windows are small, and fireplaces are absent from some of the rooms. It is stated in Dr. Newman's report that a number of deficient yards could be improved very cheaply by being levelled and covered with tar asphalt, but the paving of yards has not been pushed forward in view of near adoption of a drainage scheme for the town.—At Leighton Buzzard, the District Medical Officer states, there is no scarcity of house accommodation, and by far the greater portion is in good habitable condition. The same official thinks it only fair to house property owners to say that a certain proportion of the sanitary defects in the poorer houses which are occasionally brought to notice are due, not to the want of sanitary conveniences, but to a careless and improper use of them by negligent tenants. Nearly all the working-class houses in the town have some open space, generally in the form of a plot of garden behind, and there is no real deficiency in regard to this matter in any part of the town.

THE COLLAPSE OF THE SOUTH BRIDGE, COLOGNE. In July last the bridge which is in course of construction at Cologne collapsed, and a length of about 60 metres sank into the Rhine, causing the death of eight workmen. The accident occurred to the central span, 165 metres in width, and is the more deplorable that, so far as one can judge, it would probably have been avoidable had the necessary precautions been taken. According to the contract the bridge should have been opened in 1910, which was relatively an early date for completion, considering the obstructions occasioned by the river traffic and the mass of iron to be handled (5,000 tons). Excavations were started in 1907, and early in 1908 the iron construction was put in hand. As two years remained in which to span the three main openings of 100·46, 165·00, and 101·50 metres, it was decided only to span the central opening this year. A fixed staging was erected, furnished with an opening of 60 metres for the shipping. This opening was spanned by a temporary braced-steel girder of eight bays, which carried the main weight of the construction over the central opening. By means of the crane, 31 metres high, which stood on it, the work could be carried on from both sides towards the middle. This work was suddenly checked by the girder giving way at the sixth bay. The contractor had hoped to have completely spanned the 165 metres by November 15, but the work will now be delayed a year. An expert gives as his opinion as to the cause of the accident that the girder was overweighted, or the piles on which it rested were underwashed. This latter seems the more probable, since at the time of the accident the girder was not carrying one-half of the weight it was designed to bear. The official inquiry at present taking place will set the matter clear, and decide whether the workmanship or the project were responsible for the tragedy.

DRAINAGE AT CHATSWORTH.—A drainage scheme for Chatsworth is being carried out in accordance with plans prepared by Mr Herbert Smith, C.E., of Chippenham. The whole drainage of the house, stables, and grounds is to be remodelled, and a main sewer, upwards of a quarter of a mile long, leading to settling tanks, is now under construction by Messrs. Bell & Sons, contractors for the conduit and Chatsworth siphon of the Derwent Valley Waterworks.

THE SANITARY ADMINISTRATION OF LIVERPOOL.—This was the subject of a paper read at the Sanitary Congress at Liverpool by Mr. W. Muirhead, Chairman of the Liverpool Sanitary Sub-Committee. Remarking on the need of wide streets as lungs of the city, he said that in this connexion they were making in sections in Liverpool a boulevard (Queen's-drive) which was intended to be a girdle of the city. Their forefathers no doubt in their wisdom in troublous times herded themselves together for the common protection, if not the common good, but let their efforts now be aimed at giving that greatest sanitary inspector, the sun, a chance to shine down on squalid misery, acting as a tonic and a healer to their poorer brethren. He recommended the speedy removal of refuse in the best of all ways, viz., fire, by the provision of destructors. Besides brick-making, slab-making, and a large quantity of clinker, they were at the present time supplying from the Liverpool destructors nearly one-half the power for the Liverpool Tramway system. The efficient watering of the streets was an important health factor, as also the flushing of the sewers. The work of the Housing Committee was another great sanitary work. Owing to circumstances Liverpool had in the past suffered dreadfully from slumdom, but the very worst was, they hoped, attended to, and while much remained to be done, as much as was humanly possible had been and was being done. Other sanitary measures were the provision of baths free, and also at a nominal charge public washhouses, parks and playgrounds, the isolation of infectious diseases, and, above all, the inculcation into the minds of future citizens, the children of to-day, by their teachers of the ordinary hygienic conditions necessary to their well-being. One could not too much emphasise this, and he wished that the education authorities would insist on their staff teaching what was even more important than book learning. After all, while everyone wished the children to receive a good education, yet a clean and sober citizen was more to be desired than a scholar.

Stained Glass & Decoration.

MESSRS. PERCY BACON & BROTHERS, of London, have recently completed and set up the following works in stained glass:—Llangaffo Church, Anglesey—a memorial window, the subject being the "Good Samaritan": St. John's Church, Portmadoc, North Wales—a two-light memorial window; subject, "Christ Blessing Little Children"; the inscription in Welsh: Parish Church, Walkden, near Manchester—a memorial window to a late mistress of the infants' school in the parish; subject, "Wisdom and Her Children": Emmanuel Church, Southport—two two-light clearstory windows, the figures represented being four Virgin Saints—SS. Margaret, Catherine, Agnes, and Cecila.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. W. S. Weatherley and Mr. Francis E. Jones (architects), and Mr. Thomas Moody (surveyor), have removed their offices from 2, Haymarket to 4, Suffolk-street, Pall Mall East, S.W.

MONUMENTS IN ITALIAN CHURCHES.—Last December the Papal Council issued new regulations to the Italian bishops for the protection of monuments in the possession of the Church. According to these regulations every diocese is to appoint a permanent curator for the documents and the monuments in the charge of the clergy. The curator is to be expressly charged with the safeguarding and preservation of such objects, both in the sense of preventing their alienation and of keeping them in good condition. Exact registers of such objects and documents are to be kept. Every change in the condition of catalogued objects is to be communicated to the curator before such change is effected, and the curator will register such alterations. The curator is to keep constant watch that the clergy is doing its duty towards the preservation of these objects. On the occasion of the episcopal visits the conditions of the objects is to be ascertained, and the curator is to draw attention to any desirable arrangements. The curator is to be supported by a committee of capable clergy and laymen, who by practical suggestions and suitable proposals are to assist the responsible priest to fulfil his task. The curator is responsible for the distribution of handbooks and practical guides in his particular district. He must also keep a look-out on the antiquarian dealers to prevent sales or exchanges being effected.

PROPERTY SALES (PROVINCIAL).—Amongst the properties recently placed in the market are Nos. 99-100, High-street, Maidstone, beneath which is an old crypt, of which an illustrated description is given in Vol. XXIV. of "Archæologia Cantiana."——The Sodbury Manor estates, Gloucestershire, 385 acres, which include the ancient camp and portion of the line of entrenchment at Little Sodbury, on a brow of the Cotswolds, together with the famous old posting-house, the "Cross Hands," Old Sodbury, and Little Sodbury manor-house, the home of Tyndale whilst occupied in translating the Bible, and of David Hartley, the diplomatist, who negotiated with Franklin the treaty of peace in 1783 between Great Britain and the United States (sold for 12,705*l.*).——Hatford Manor-house, three miles from Farringdon, and situated upon the Pusey estate, which originally belonged to Sir Robert de Hatford, and was subsequently owned by the family of Chaucer, the poet, whose granddaughter Alice brought it in marriage to William De la Pole, Duke of Suffolk, upon whose death it reverted to the Crown, and ultimately became vested in the Puseys; in Ewelme Parish Church, Oxfordshire, are monuments to Thomas Chaucer (the poet's son) and his daughter Alice, Duchess of Suffolk, who died in 1465.——The Friars, Winchelsea, with 80 acres of land embracing the Seaward cliff and the ruins of the Grey Friars' convent, founded by Edward II.; the house was built in 1820 upon the site of the cloisters by R. Stileman, ancestor of the owner, the late Major Curteis Stileman.——Monken Hadley House, Hadley Green, near Barnet, where Thackeray first lived on coming to England from India.——Chute Lodge, a house designed and decorated by the brothers Adam, and enlarged and improved by the owner, Mr. A. Grant Meek, who added a new wing, with a finely-timbered park of 200 acres and 1,050 acres of preserves and cultivated land in Tangley and Chute Forest, East Wiltshire (withdrawn after a bid of 35,250*l.*).——Kingston Lisle Park, near Wantage, extending over 2,600 acres, which from a remote period belonged in turn to the houses of Fitzgerald, De Lisle, Fitzhardinge, Beauchamp, Talbot, and Dudley; ownership of the manor and lordship formerly gave title to a summons to Parliament as Baron de Lisle; on the estate is Blowing Stone Hill, at the foot of which lies the Sarsen stone so named, near Wayland Smith's cave and the British camp of Uffington Castle on White Horse Hill.——Waterloo meadows, 145 acres, near Brampton, Hunts, the scene, until twelve years ago, of the once popular Huntingdon races and steeplechases, and the Cambridge University "drags" and "grinds"; the racecourse, latterly rented at 120*l.* 14s. per annum, has been sold to Lord Sandwich, of the adjacent Hinchinbroke House.

"IDEAL HOME" EXHIBITION.—On October 9 an exhibition will be held at Olympia which will comprise exemplars relating to methods of construction, sanitation, and decoration; heating, cooking, and lighting; cleaning and hygiene; and furnishing. There will be exhibits from the Queen's technical schools at Sandringham, and an acre is being laid out as a model homestead, with vegetable garden, poultry-yard, apiary, and so on.

INTERNATIONAL NAVIGATION CONGRESS, ST. PETERSBURG.—The business of this (the eleventh) congress was divided into two sections, the first dealing with inland, the second with marine navigation. After the formal opening in the large hall of the Conservatoire the delegates from foreign countries gave *résumés* of the hydraulic engineering works which had been executed in their respective countries since the meeting of the last congress, Colonel C. Sandorf, of the United States, representing the English-speaking countries. The questions discussed in the first section (with which alone we are concerned) included the designing of sluices for rivers with widely-varying water levels; economic, technical, and legislative inquiries into mechanical expedition on rivers, canals, and lakes; equipment of harbours for inland traffic, especially with regard to the progress of electricity; canals which serve the double purpose of navigation and irrigation; protection of lowlands from floods. Papers were also read by Mr. Twelvetrees and others on ferro-concrete as used in hydraulic engineering; the co-operation of Government and interested parties in measures taken for developing inland navigation; Intelligence Department reports on floods occasioned by high water and the melting of ice.

INTERNATIONAL RECORD OF PHOTOGRAMMETRY.—The Austrian Society for Photogrammetry in Vienna, the first scientific body of the kind, has for its object the propagation of the theory and practice of the art of photographic measurement, of photogrammetry and stereophotogrammetry, its perfecting and extension, and its adaptation to various branches of science. In order to further its object, the Society publishes a periodical entitled *Internationales Archiv für Photogrammetrie*, edited by Professor E. Doležal, of the Technical College, Vienna, and including contributions from eminent scientists in Austria, Germany, France, Italy, Russia, Spain, Hungary, and Canada. The first quarterly number appeared last March.

DRY-ROT.—Herr Anton Klein, architect, of Baden-Baden, writes:—"A temperature of 40 deg. C. is sufficient to drive away the smell of dry-rot, but this is not sufficient to kill the spores of the fungus; to my knowledge these will remain capable of germinating from one and a half to ten years; the fungus then is not dead, only its exterior is dried up and odourless. The diseased wood should certainly be removed, otherwise, under favourable conditions, especially in washhouses, I have known the disease break out afresh. Besides this the diseased wood loses its strength, and the responsibility lies with landlord and builder. The newest work on dry-rot, by Dr. Karl Mez, Professor of Botany in Halle, A.S., is excellent; in spite of this I can contradict some of the matter from thirty years' experience in South Germany. The fungus is not killed by a temperature of 15 deg., the spores continue to show life. Only light, air, the prevention of damp, and the removal of all diseased wood are of avail. If the strength of the wood be impaired, no solutions, no amount of heat or of cold, are of any use."

HOARDINGS AND PROJECTIONS IN LONDON.—The Metropolitan Borough Councils are appointing delegates to a conference convened by the London County Council to consider proposals as to the making of by-laws with reference to hoardings under the Advertisement Regulation Act, 1907, and projections over the public highway under the London Building Act, 1894. It is understood that draft by-laws have been prepared by the central authority as a basis of discussion. Advantage is to be taken of the opportunity to discuss the question of the classes of structures to be dealt with by the County Council and the local authorities under sects. 83 and 84 respectively of the London Building Act, 1894.

NEW MUNICIPAL BUILDINGS FOR BETHNAL GREEN.—The Works Committee of Bethnal Green Borough Council issued a report on Monday stating that negotiations have been carried on with the owners of property at Patrick-square required for the site of the new municipal buildings. Nos. 8, 9, and 10 have been purchased for 900*l.* in each case, and a strip of land, which formerly belonged to the London County Council, has been acquired for 335*l.* The vendors of the other part of the site have declined offers made, and with the possible exception of No. 14 the Committee are of opinion that the acquisition of the interests is unlikely to be obtained by private treaty. Under the Local Government Board's Provisional Orders Confirmation (No. 5) Act, 1908, compulsory powers of purchase were obtained, and the Committee have decided (subject to the usual sanction) to put these powers into operation.

ST. PANCRAS BOROUGH COUNCIL.—The repaving of the northern half of Tottenham-court-road has been postponed in order to ascertain if the asphalt which has been laid down in the other portion of the thoroughfare is a suitable material for the traffic. Negotiations have been resumed between the joint committee of the Borough Council and the London County Council as to various matters connected with the electrification of the tramways from Euston-road to Holloway. The result is that the local authority's representatives have approved of amended plans (subject to the usual sanction) conditional upon wood paving being retained in the tramway tracks of Hampstead-road and High-street, Camden Town. Questions as to the reconstruction of an underground convenience at Camden Broadway, and the alterations of levels of the carriage-way there, are still the subject of negotiation. The London County Council are to be asked, in connexion with the erection of new buildings by the Skinners' Company to carry out the widening of Euston-road as a metropolitan improvement. Messrs. Dorman, Long, & Co. are to undertake the strengthening of stanchions in the old building at the King's-road generating-station. The contract price is 64*l.*

PROPOSED RESTORATION OF SAN LORENZO, FLORENCE.—The origin of the rumour concerning San Lorenzo is traced to the fact that the Italian Government has decided to make over to the church the fees charged for showing the Medici Chapel containing Michelangelo's tombs, which fees amount to 25,000 francs annually. With this money it is proposed not only to keep the celebrated basilica in better condition, but also to make certain important repairs. The first scheme is to construct the façade which Brunelleschi had never begun, and for which he left no plans, the façade which Leo X. commissioned Michelangelo to design and for which Giuliano di San Gallo made drawings, still extant, which could easily be carried out. Moreover, a short time since a competition was opened in Florence for a design, that of a young talented architect, M. Bazzani, being placed first. Nothing has as yet been decided about the question, and doubtless nothing will be settled for some time. A second scheme consists in laying out a square and raising a low terrace in front of the church. These works would be easy and unimportant, but so long as the façade remained unbuilt it is a question whether such works are necessary, and whether they would not merely emphasise the bareness of the façade wall. The third scheme is doubtless the only one that would involve much work, but we fear it would also cause much disillusioning. It is a question of pulling down all the houses which abut on the north side of the church and screen the lateral features. Now these features are very simple, as may be verified by examining them from the rear, where nothing screens them. But what is more serious is the fact that Brunelleschi's original plan has been modified at intervals, first by Manetti's chapel, constructed of material different from that used in the main building; then by the addition of the Medici Chapel by Michelangelo; and finally by that of the chapel intended to receive the tombs of the Grand Dukes. All this has been clumsily patched together, and this patchwork will be the more apparent and the more displeasing when the screen of houses has been removed. It is to be hoped, therefore, that the matter will be carefully thought out before the existing state be altered for one which does not promise to be any more satisfactory.

DARLEY DALE STONE.—We have received from the Stancliffe Estates Company three samples of stone from their quarries. One specimen is distinguished as Stancliffe stone, being from the original Darley Dale quarries. This is a close-grained micaceous grit, the mica occurring in minute silvery spangles. It is of pale brown colour, compact, and very hard, and has the average weight of 148 lb. per cubic foot. According to Professor Clowes, its constitution is as follows:—

Silica	96·4
Calcium carbonate	0·36
Iron and alumina	1·3
Water (and loss)	1·94
	100·00

This analysis indicates that the sample of stone examined contained nearly 96½ per cent. of material unaffected by the weather, and little more than 1½ per cent. of mineral substances that might give rise to disintegration. Owing to its durability the stone has been largely used in London and other large cities, one of the finest examples of its employment being St. George's Hall, Liverpool. The second and third specimens received are termed Cromford stone and Hall Dale stone. These are akin to Stancliffe stone, but of somewhat deeper tint, and are not quite so strong. The resistance of the three varieties is indicated by the following results of tests made by Messrs. Kirkaldy & Son on 4-in. tubes:—

Stancliffe stone, crushing strength	570·3	lb.	per	sq. ft.
Cromford " " "	534·1	"	"	"
Hall Dale " " "	497·4	"	"	"

HUNGARIAN TIMBER.—Judging from specimens in the forestry section of the Hungarian Exhibition, the forests of Hungary yield timber which, in respect of size and quality, is much above the average. One of the exhibits is the lower half of an oak trunk, and its 70-ft. length is so straight and free from knots that the popular verdict is that it has been wrongly labelled. The difference between that and examples of the same species (*Quercus pedunculata*) grown in this country certainly is very remarkable. Hungarian oak commands a high price in the London market, where, strange to say, it is always incorrectly described and sold as being of Austrian origin. The oak forests of Hungary cover nearly 9,500 square miles.

SOUTHWARK BOROUGH COUNCIL.—Consent has been given the Postmaster-General to place underground telegraph wires along Blackfriars-road, Stamford-street, Broadwall, and Upper Ground-street, and in a portion of Old Kent-road. In June the Council agreed to contribute one-third of the cost of widening Walworth-road, between Liverpool-street and Trafalgar-street, such contribution, however, not to exceed 2,500*l.* Subsequently the London County Council asked that this offer be reconsidered. The General Purposes Committee have now decided in favour of contributing one-half, subject to the central authority undertaking to carry out the widening of Walworth-road between Sutherland-place and Carter-street at the expiry of the leases of the property, or at such earlier time as they may be enabled to do so.

MISCELLANEOUS—*Continued on page 313.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xvii.; Auction Sales, xxvi.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.**

Competitions.

OCTOBER 7.—**Inverness.**—BOAT SHELTER.—Inverness Harbour Trustees invite engineers to submit plans for the construction of a boat shelter at the Harbour at Inverness, the total cost of the scheme not to exceed 10,000*l.* Mr. Kenneth Macdonald, Clerk to the Harbour Trustees Town House, Inverness.

* DECEMBER 14. — **Blackpool.** — CENTRAL PUBLIC LIBRARY.—The Blackpool B.C. invite designs for a new Public Library. See advertisement in this issue for further particulars.

* NO DATE.—**Cornwall.**—NEW COUNTY OFFICES.—The Cornwall C.C. invite competitive designs and estimates for new County Offices. See advertisement in this issue for further particulars.

Contracts.

BUILDING.

SEPTEMBER 21.—**Dundalk.**—OFFICE, ETC.—Directors of Great Northern Railway Company (Ireland) invite tenders for a new office to be built on the Dundalk Station platform, and for the conversion of an old stores building at Dundalk into a fitting shop. Drawings, etc., can be seen at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens-street Terminus, Dublin, or copies at the office of the district Engineer, Belfast, and at the said offices can be obtained forms of tender on payment of 1*s.* each (not returnable).

SEPTEMBER 21.—**New Romney.**—PULLING DOWN AND RE-ERECTION.—New Romney T.C. invite tenders for pulling down an existing small building, and the erection of another building, etc., on the same site adjoining the Assembly Rooms, New Romney, for the purpose of housing all the carts, etc., belonging to the Corporation. Plan of the proposed buildings and specifications can be seen at the office of Mr. J. Bannon, Town Clerk, Town Clerk's Office, Town Hall, New Romney, any day between 10 a.m. and 4 p.m. (Saturdays, 1 p.m.).

SEPTEMBER 22.—**Camborne.**—HOUSE.—Tenders are invited for the erection of a nine-roomed house in Tehidy-road, Camborne, for Mr. F. Bottrell. Plans, etc., may be seen at Mr. F. Mills's, Wellington-road.

SEPTEMBER 22. — **Carlisle.** — ENCLOSING FOOTBALL GROUND.—Alternative tenders are required for the enclosing of the Brunton Park Ground, Carlisle, for the Carlisle United Association Football Club, Ltd., with brick, concrete, or wood. Plans and specifications can be seen at offices of Mr. H. Foxall, architect, 54, Lowther-street, Carlisle.

SEPTEMBER 22.—**Newtownstewart, Co. Tyrone.**—Tenders are required for erecting a new Presbyterian Church at Newtownstewart, Co. Tyrone. Schedule of quantities and conditions of tender can be obtained from Mr. Acheson Ferguson, 3, Wellington-place, Belfast, on a deposit of 2*l.* 2*s.* Plans and specification may be seen at office of Messrs. Young & Mackenzie, Scottish Provident Buildings, Belfast.

SEPTEMBER 22.—**Poole.**—CONCRETE WALL.—Tenders are invited for constructing concrete wall and re-erecting fence by St. Joseph's Church, Bournemouth-road. Particulars may be obtained on application at office of Mr. Samuel J. Newman, F.R.I.B.A., Borough Surveyor, King-street, Poole.

SEPTEMBER 22.—**Port Talbot.**—CHAPEL.—Tenders are invited for the erection of a new Congregational Chapel at Port Talbot for the Building Committee of Tabernacle Newydd. Plans, etc., may be seen at office of Messrs. Evans & Jones, architects and surveyors, 5, Station-road, Port Talbot, and quantities obtained on deposit of 2*l.* 2*s.*

SEPTEMBER 23.—**Lanchester.**—ALTERATIONS.—Lanchester Guardians invite tenders for alterations, etc., to porter's lodge at Lanchester Workhouse, also for fitting up the Workhouse Board-room Offices, Cottage Homes, etc., with gas pipes, etc., complete. Drawings, etc., may be seen, and forms of tender obtained, at the office of Mr. Geo. Thos. Wilson, architect, 22, Durham-road, Blackhill.

SEPTEMBER 23.—**Leeds.**—SCHOOL.—For the whole or the various works required in the erection of Wesleyan school and class-rooms at Headingley, Leeds. Names to Mr. G. F. Danby, architect, 73, Albion-street, Leeds.

SEPTEMBER 23.—**Leicester.**—SCHOOL EXTENSIONS.—Leicester Education Committee invite tenders for the erection, completion, and maintenance for nine months after completion, of extensions to the Municipal Technical and Art Schools, The Newarke, Leicester. Bills of quantities and forms of tender may be obtained from the architects, Messrs. Everard, Son, & Pick, 5, Millstone-lane, Leicester, on payment of 2*l.* 2*s.*

SEPTEMBER 23. — **Manchester.** — SHELTERS, ETC.—Manchester Parks Committee invite tenders for the erection of messroom and shelters at Delamere-street Open Space. Drawings may be seen, and specification, etc., obtained, at the office of the City Architect, Town Hall, Manchester, upon payment of 1*l.* 1*s.* All cheques or postal orders to be made payable to the order of "The Corporation of Manchester."

SEPTEMBER 23.—**Manchester.**—TOOL-HOUSE, ETC.—Manchester Parks Committee invite tenders for the erection of tool-house, messroom, and male and female conveniences at Plymouth-grove Recreation Ground. Drawings may be seen, and specification, etc., obtained, at the office of the City Architect, Town Hall, Manchester, upon payment of 1*l.* 1*s.* All cheques or postal orders to be made payable to the order of "The Corporation of Manchester."

SEPTEMBER 24.—**Stoke Bishop.**—CONSERVATORY IMPROVEMENTS.—Tenders are required for alterations and additions to conservatory, Bishop's Knole, Stoke Bishop, for Mr. R. E. Bush. Plans, etc., can be seen at offices of Mr. Henry Williams, architect, Alliance-chambers, Corn-street, Bristol.

SEPTEMBER 24.—**West Riding.**—SCHOOL IMPROVEMENTS.—The West Riding Education Committee invite whole or separate tenders in connexion with the following works, viz.:—Denby and Cumberworth: Birdsedge Provided School.—Erection of new cloak-room, etc. Thornton-in-Craven: Elslack new School.—Asphalting. Soothill: Gregory-street Provided School.—Improvements (joiner). Soothill: Earlsheaton Provided School.—Erection of new latrines. Plans may be seen, and bills of quantities obtained, on application to office of Mr. J. Vickers-Edwards, County Architect, County Hall, Wakefield.

SEPTEMBER 25.—**Marazion.**—VILLA.—Tenders are invited for the erection of a villa at the Picnic Grounds, Marazion. Plans, etc., can be seen at Mr. J. A. Treglown's Auction and Valuation Offices, Marazion.

SEPTEMBER 26.—**Killower.**—WALL.—Tuam R.D.C. invite tenders for making a wall around the addition to the burial-ground at Killower, in accordance with the plan and specification to be seen at the Board-room of the Workhouse. Mr. James Daly, Acting Clerk of Council, Board-room, Tuam.

SEPTEMBER 26.—**Neath.**—VILLA.—Tenders are invited for the erection of a villa at Neath for Mr. F. Manton. Plans and specification may be seen at the offices of Mr. J. Cook Rees, architect, Neath.

SEPTEMBER 28.—**Pontardulais.**—SCHOOL CHAPEL.—Tenders are invited for the erection of a new English Methodist school chapel at Pontardulais. For full particulars apply to Mr. W. Beddoe Rees, architect, Dumfries-place, Cardiff.

SEPTEMBER 28.—**Sanquhar.**—RESTORATION.—Sanquhar Public Halls Company, Ltd., invite tenders for the mason, joiner, slater, plumber, and plaster works in connexion with the restoration of the Public Hall in Sanquhar, destroyed by fire. Plans, etc., may be seen, and schedules of quantities obtained, from Mr. James R. Wilson, Solicitor, Sanquhar, Secretary, or from Messrs. Ingram & Brown, architects and C.E., Kilmarnock.

SEPTEMBER 28.—**Teignmouth.**—SEA DEFENCE WORKS.—U.D.C. of Teignmouth invite tenders for the construction of sea-defence works, adjacent to the Promenade, Teignmouth. Plans may be seen, and copies of the general conditions, etc., and form of tender obtained, on application at office of Mr. Charles F. Gettings, Engineer, Town Hall, Teignmouth, on payment of a deposit of 5*l.* 5*s.*

SEPTEMBER 29.—**West Hartlepool.**—DOCK.—The Corporation invite tenders for the construction of dock, Back Alexandra, and Outram-street (West end). Plan, etc., may be seen, and form of tender, with approximate quantities, obtained, upon application at office of Mr. Nelson F. Dennis, A.M.Inst.C.E., Borough Engineer and Surveyor, Municipal Buildings.

* SEPTEMBER 30.—**Rustington.**—ENTRANCE LODGE.—The Metropolitan Asylums Board invite tenders for an entrance lodge at Millfield, Rustington, Sussex. See advertisement in this issue for further particulars.

* OCTOBER 5.—**Newport.**—TECHNICAL INSTITUTE.—The Newport Education Authority invite tenders for a technical institute in Clarence-place. See advertisement in this issue for further particulars.

OCTOBER 7.—**Burton-upon-Trent.**—POLICE BUILDINGS.—The Corporation invite tenders for building a new police-station, superintendent's house, and court-house, in the Borough. Drawings, etc., may be seen, and bill of quantities and form of tender obtained, at the office of Mr. Henry Beck, architect, 10, High-street, Burton-upon-Trent, on and after the 23rd inst., upon the deposit of a cheque or post-office orders for 3*l.* 3*s.*

OCTOBER 10.—**Galway.**—FEVER HOSPITAL.—Galway Board of Guardians invite tenders for the erection of a new fever hospital at Galway in accordance with drawings prepared by their architect, Mr. Alfred Cowlishaw, Brentwood, Galway. Plans and other particulars may be seen at office of Mr. Robert F. Mullery, Clerk of Union, Union Offices, Workhouse, Galway, between 10 a.m. and 4 p.m. Quantities will be supplied on deposit of 2*l.*

* OCTOBER 12.—**Croydon.**—ADDITIONS TO WORKHOUSE.—The Guardians of the Croydon Union invite tenders for additions to Workhouse, etc. See advertisement in this issue for further particulars.

NO DATE.—**Bedwas.**—HOUSES.—Tenders are invited for the erection of two houses at Bedwas, Mon. Plans, etc., and all particulars may be had of Mr. J. Gibbon, Church Farm, Bedwas, or Mr. T. Howell, Rhiwderin, Mon.

NO DATE. — **Pindochty.**—SCHOOL.—Estimates are wanted for the mason, carpenter, plumber, slater, plasterer, and painter works in the erection of new schools at Pindochty. Offerers to communicate with Mr. R. B. Pratt, A.R.I.B.A., architect, Elgin.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 22.—**Bedford.**—IRON STAIRCASE.—The Guardians invite tenders for an iron staircase in accordance with plan and specification, which may be inspected at office of Mr. William Payne, Clerk to the Guardians, Union Offices, 115, High-street, Bedford.

SEPTEMBER 22.—**Glasgow.**—STORES, ETC.—Corporation of Glasgow (Gas Department) invite tenders for the supply of materials, and also for cartage of ashes, etc., at Provan and Tradeston Gasworks, and cartage for Street Mains and Workshops Department. Specification and forms of tender may be obtained on application to Mr. Alex. Wilson, the Gas Engineer, at his office, 45, John-street, Glasgow.

SEPTEMBER 22. — **London.** — BRIDGEWORK. — The Mexican Railway Company, Ltd., invite tenders for the supply and delivery of 127 tons bridgework. Specifications, etc., can be obtained at the Company's Offices on payment of 10*s.* each, between 10 a.m. and 3 p.m., Saturdays excepted. Mr. John T. Denniston, Secretary, the Mexican Railway Company, Ltd., 6, Broad-street-place, London, E.C.

SEPTEMBER 23.—**Lamington.**—UNDERBRIDGES.—The Directors of the Caledonian Railway Company invite tenders for the construction of the steel work required in the renewal of the superstructures of the underbridges at 60 miles 60 chains and 63 miles 5 chains on the main line, near Lamington Station. Drawings may be seen at the office of the Company's District Engineer, Princes-street Station, Edinburgh, where copies of the specification and schedule may be obtained on payment of 2*l.* 2*s.*

SEPTEMBER 29.—**London.**—RAILWAY STORES.—The Directors of Bombay, Baroda, and Central India Railway invite tenders for the supply of red and white lead, materials for steel foundry, and spring steel. Tender forms, with specifications, can be obtained at offices of Mr. W. V. Constable, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate-street Without, London, E.C., on payment of 1*l.* 1*s.* each (which will not be returned).

SEPTEMBER 30.—**Clydebank.**—CAST-IRON PIPES, ETC.—The Clydebank and District Water Trustees invite offers for making and delivering about 4,100 tons of 18 in. diameter cast-iron pipes and special castings. Copies of the specification and schedule of quantities may be obtained from the engineers, Messrs. Warren & Stuart, 94, Hope-street, Glasgow, on deposit of 2*l.* 2*s.*

OCTOBER 1. — **London.** — RAILWAY STORES. — The Directors of the Great Indian Peninsula Railway Company invite tenders for the supply of stores. Specifications and forms of tender may be obtained at office of Mr. J. I. Berry, Secretary, Company's Offices, 48, Copthall-avenue, London, E.C., on payment of the fee for the specification, which payment will not be returned.

NO DATE.—**Chilton Lane.**—ELECTRIC LIGHTING.—Chilton P.C. invite tenders for the complete installation of 31 by 32 c.p. lamps in the Chilton Lane District. Power to be obtained at Mainsforth Colliery. Specifications may be obtained on application to Mr. M. Wright, Clerk, 7, Dene-bridge, Ferryhill.

MISCELLANEOUS.

SEPTEMBER 21.—**Brockenhurst.**—OAK FOOTBRIDGE.—Lymington R.D.C. invite tenders for the construction of an oak footbridge at Brockenhurst. Particulars can be obtained of Mr. S. Crittall, Surveyor, Sway.

SEPTEMBER 21.—**Copley and Salterhebble.**—EXCAVATING.—Highways Committee of the Halifax Corporation invite tenders for the execution of the excavator's work required in connexion with the proposed bacterial filters at Copley and Salterhebble respectively. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. James Yord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax, upon payment of the sum of 1*l.*

SEPTEMBER 21.—**Lymington.**—STEAM ROLLING.—Lymington R.D.C. invite tenders for the work of steam rolling the main and district roads. Forms of tender and other particulars can be obtained of Mr. S. Crittall, Surveyor, Sway.

SEPTEMBER 21.—**Rhondda.**—SCAVENGING.—Rhondda U.D.C. invite tenders for the scavenging of their district in sections. Specification and form of tender may be obtained at the department of Mr. W. J. Jones, Surveyor, Public Offices, Pentre, Rhondda.

SEPTEMBER 21.—**Ringwood.**—STEAM ROLLING.—The R.D.C. of Ringwood invite tenders for steam rolling the main roads of the district. Further particulars may be obtained from Mr. George P. Brown, Clerk of the Council, Ringwood.

SEPTEMBER 22. — **Drayton.** — HAULAGE.—R.D.C. of Drayton invite tenders for haulage of road materials in the district. Printed schedule, together with form of contract, may be had on payment of 6d. on application at the office of Mr. John St. C. Upton, Clerk of the Council.

SEPTEMBER 22.—**Preston.**—CARTING.—The R.D.C. of Preston invite tenders for carting road materials from Crombleholme Fold and Silk Mill Quarries and copper slag from Inglewhite. Particulars and forms of tender from Mr. A. W. Chrystall, Surveyor, Saul-street, Preston.

SEPTEMBER 23.—**South Molton.**—STEAM ROLLING.—South Molton R.D.C. invite tenders at per roller for the hire of not exceeding four steam rollers. Tenders to include lodging for the employees, coal, oil, and all other requisites for the engines. Mr. Fred Day, Clerk to the Council, South Molton.

* SEPTEMBER 28.—**Southall.**—RAIN-WATER GUTTERS, ETC.—The St. Marylebone Guardians invite tenders for renewing certain rain-water gutters and repairing others. See advertisement in this issue for further particulars.

SEPTEMBER 23. — **Southowram.** — TEAM LABOUR.—Southowram U.D.C. invite tenders for the general team labour of the district. Mr. R. W. Evans Commercial Bank-chambers, Halifax, Solicitor and Clerk to the Council.

OCTOBER 1.—**Leamington Spa.**—WELL SINKING.—The Corporation invite tenders for driving headings (about 200 ft.) from one of their wells. The specification and drawing may be seen at the office of their Engineer, Mr. W. de Normanville, at the Town Hall.

* OCTOBER 3. — **Paddington.** — IRON STRONG-ROOM FITTINGS.—The Paddington B.C. invite tenders for supply and fixing of iron shelves and fittings to the strong rooms at the Town Hall. See advertisement in this issue for further particulars.

OCTOBER 5. — **Middleton.** — WATER VAN.—The Corporation invite tenders for the supply and delivery of a two-wheeled water van on the revolving disc principle. Further particulars may be obtained from Mr. W. Welburn, Borough Surveyor, Middleton.

OCTOBER 19.—**Amsterdam.**—TIMBER.—Municipality of the City of Amsterdam invite tenders for the supply of square hewn timber and square sawn timber for the City's new Harbour Works. Specifications, giving full descriptions, also of form of tender, may be obtained at the City Printing Office, 43, Nes, on payment of 6d each, post free. Further information may be obtained from the City Harbour Engineer, City Hall, Room 151, Amsterdam.

NO DATE.—**Aberdare.**—RESLATING.—Tenders are invited for reslating the Constitutional Club Buildings, Aberdare. Particulars can be had of Mr. C. H. Elford, M.S.A., architect, 42, Canon-street, Aberdare.

PAINTING, etc.

SEPTEMBER 21. — **Ancoats.**—PAINTING.—Manchester Watch Committee invite tenders for painters' work at the Pollard-street Fire-station, Ancoats. Specification may be obtained at the office of the City Architect, Town Hall, upon payment of 10s. 6d. All cheques and postal orders to be made payable to the order of "The Corporation of Manchester."

SEPTEMBER 21. — **Baguley.**—PAINTING.—Manchester Sanitary Committee invite tenders for painters' work at the Baguley Sanatorium. Specifications may be obtained at the office of the City Architect, Town Hall, Manchester, on payment of 10s. 6d. All cheques or postal orders to be made payable to the order of "The Corporation of Manchester."

SEPTEMBER 21. — **Bradford.** — PAINTING.—Bradford Education Committee invite tenders for the outside painting of several schools and the inside painting of two caretakers' houses. Specifications and forms of tender may be obtained at the Education Office (Buildings Department), Manor-row, Bradford.

SEPTEMBER 22.—**Exeter.**—PAINTING AND REPAIRS.—The Guardians invite tenders for certain painting and general reparation at 5 and 7, Higher-summerlands, Exeter. Specifications may be seen, and full particulars obtained, at the office of their architect, Mr. R. M. Challice, 14, Bedford-circus, Exeter.

SEPTEMBER 22.—**Halifax.**—PAINTING.—The Markets Committee of the Halifax Corporation invite tenders for painting the interior of three houses in Victoria-road. Plans and specifications may be seen, and forms of tender obtained, on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax.

SEPTEMBER 23. — **Ashford.** — PAINTING.—West Ashford Guardians invite tenders for the painting of the exterior of the Workhouse buildings and premises now painted. Specification and form of tender can be obtained from the architect, Mr. A. E. Lacey, 15, North-street, Ashford.

SEPTEMBER 23. — **Pentre.** — PAINTING, ETC.—Tenders are invited for papering and painting, etc., the Ivor Hael Hotel, Llwynypia, for Messrs. David John & Co., Ltd., Pentre Brewery, Pentre. Specification may be seen at the hotel or at office of Mr. W. D. Morgan, M.S.A., architect, 194, Ystrad-road, Pentre.

SEPTEMBER 29.—**Rathmines.**—PAINTING.—Rathmines U.D.C. invite tenders for the painting of the lamp-posts in the district. Specification can be had on application to the Electric Engineer's office, Electricity Works, Rathmines.

* SEPTEMBER 30.—**Blackwall.**—CLEANING AND PAINTING.—The Metropolitan Asylums Board invite tenders for cleaning and painting works at the North Wharf Small-pox Shelters, Managers-street, Blackwall, E. See advertisement in this issue for further particulars.

* SEPTEMBER 30.—**Dartford.**—CLEANING AND PAINTING.—The Metropolitan Asylums Board invite tenders for cleaning and painting works at the Small-pox Hospitals, Dartford, Kent. See advertisement in this issue for further particulars.

* SEPTEMBER 30. — **Rotherhithe.** — CLEANING AND PAINTING.—The Metropolitan Asylums Board invite tenders for cleaning and painting works at the South Wharf Small-pox Shelters, Trinity-street, Rotherhithe, S.E. See advertisement in this issue for further particulars.

ROADS, SANITARY, AND WATER WORKS.

SEPTEMBER 21.—**Newlyn.**—RESERVOIR, ETC.—Tenders are invited for building a new reservoir at Sheffield, Paul, and laying a water main from same to the new ice factory at Newlyn for Messrs. R. R. Bath and Newlyn Ice Company, Ltd. Plans, etc., are to be seen at the office of Mr. Henry Maddern, architect, 13, Clarence-street, Penzance.

SEPTEMBER 21. — **Plymouth.**—STREET WORKS.—The Corporation invite tenders for making up and completing the following streets and lanes:—Edgcumbe Park-road, Farringdon-road (section 2), Gleneagle-avenue, Glendower-road (section 3), Quarry Park-road. Plans, etc., may be seen, and bills of quantities obtained, at office of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth.

SEPTEMBER 21.—**Shinfield and Swallowfield.**—WATER MAINS.—Wokingham R.D.C. invite tenders for the supply and laying of about 849 lin. yds. of 4-in. cast-iron water main, and about 250 yds. of 3-in. ditto, including the supply and fixing in position of sluice valves, hydrants, etc., in Parishes of Shinfield and Swallowfield. Plans may be seen, and specification, etc., obtained, at office of Mr. John F. Sargeant, Clerk, Council Offices, Wokingham, on payment of 1*l.*

SEPTEMBER 22. — **Scartagh.** — IMPROVEMENTS TO WATERWORKS.—The Clonakilty U.D.C. invite tenders for certain improvements and additions to their Waterworks at Scartagh, Clonakilty, in accordance with the plans and specification prepared by A. W. Barnard, M.Inst.C.E.I., which may be inspected daily at the Town Clerk's Office, Clonakilty, between 10 and 4 o'clock.

SEPTEMBER 22.—**Tynemouth.**—STREET WORKS.—The Corporation invite tenders for executing street works. Plans and specifications may be seen at the office of Mr. John F. Smillie, Borough Surveyor.

SEPTEMBER 24.—**Rhondda.**—PRIVATE STREET WORKS.—Rhondda U.D.C. invite tenders for:—(1) The making-up of Trealaw-road, Trealaw; (2) the laying of about 170 lin. yds. of 12-in. surface-water drain at Thomas-street, Tonypandy. Plans may be seen, and form of tender obtained, at the office of the Engineer and Surveyor, Public Offices, Pentre, Rhondda, on payment of 1*l.* 1*s.* for each contract.

SEPTEMBER 25. — **Cambridge.** — SEWERS. — The Chesterton Guardians invite tenders for the construction of certain sewers at the Union Workhouse. Plans and specifications can be seen at the office of Mr. W. Wren, Castle-street, Cambridge.

SEPTEMBER 25.—**Hopton.**—ROAD WORKS.—Tenders are invited for draining, forming, macadamising, flagging, etc., Chadwick-road and Wood End-road, Hopton, Mirfield. Drawings, etc., may be seen, and quantities and form of tender obtained, at offices of Messrs. C. H. Marriott, Son, & Shaw, civil engineers, Church-street-chambers, Dewsbury, on payment of 1*l.* 1*s.*

SEPTEMBER 26.—**Durham.**—MAKING-UP STREETS.—Durham Council invite tenders for the making-up of sixteen streets. Plans and sections may be seen, and specifications, etc., obtained, on application and upon payment of 1*l.* 1*s.* Mr. John T. Pegge, City Surveyor, 60, Sadler-street, Durham.

SEPTEMBER 26.—**Earlsheaton.**—PAVING.—Dewsbury Joint Hospital Board invite tenders for the paving of portions of the footpaths at the Fever Hospital, Earlsheaton. Specifications and forms of tender may be obtained on application at office of Mr. H. Ellis, Clerk, Town Hall, Dewsbury.

SEPTEMBER 28. — **Caerphilly.** — PRIVATE STREET WORKS.—Caerphilly U.D.C. invite tenders for paving, sewering, forming, metalling, etc., part of Eglwysilan-road, Abertridwr, Morgan-street and Church-street, Llanbradach. Plans, etc., may be seen, and forms of tender obtained, at the Surveyor's Office, Cardiff-road, Caerphilly, upon depositing the sum of 1*l.* 1*s.*

SEPTEMBER 28.—**Litherland.**—ROAD RECONSTRUCTION.—The U.D.C. of Litherland invite tenders for the reconstruction of Violet-road, Litherland. Drawings, etc., may be seen, and quantities, form of tender, and all other particulars obtained, on application to Mr. A. H. Carter, Surveyor to the Council, public Offices, Sefton-road, Litherland, on payment of 10*s.* 6*d.*

* SEPTEMBER 28. — **Peckham Rye.** — ROADS AND PAVING.—The Camberwell B.C. invite tenders for curbing, channelling, foundations for asphalt paving, and roadwork in certain new streets in Peckham Rye. See advertisement in this issue for further particulars.

SEPTEMBER 29.—**Ealing.**—SURFACE-WATER SEWERS.—Ealing T.C. invite tenders for the construction of new surface-water sewers in Windmill-lane, etc., and manholes, etc., in connexion therewith, of about 1,330 ft. of 9-in. stoneware pipe. Drawings and specification may be seen, and forms of tender, together with schedule of quantities and other particulars, obtained from Mr. Charles Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W., upon payment of a deposit of 2*l.* 2*s.*

SEPTEMBER 29.—**Leyton.**—PRIVATE STREET WORKS.—The Leyton U.D.C. invite tenders for the making-up, kerbing, and paving of certain private streets within their district. Specification, quantities, and form of tender may be obtained on and after the 21st inst., on application to Mr. William Dawson, M.Inst.C.E., the Council's Surveyor, at his office, Town Hall, Leyton, between 10 a.m. and 4 p.m. (Saturdays, 10 a.m. and 12 noon).

SEPTEMBER 29. — **Queenborough.** — EXTENSION OF SEWERS.—The T.C. of Queenborough invite tenders for providing and laying 637 lin. yds. of 12-in. stoneware pipe sewer, and 50 lin. yds. of 30-in. steel ribbed concrete tubes, in accordance with plans, specifications, and bill of quantities, which can be seen at the office of Mr. Horatio Small, Borough Surveyor, Queenborough, where forms of tender can be obtained. Copies of the specifications, etc., can be obtained on payment of 10*s.*

* SEPTEMBER 29.—**Willesden.**—ROADS AND PAVING.—The Willesden D.C. invite tenders for certain road-making and paving works in Furness-road and Cholmondeley-avenue, Harlesden, Okehampton-road, Kensal Rise, and Wotton-road, Cricklewood. See advertisement in this issue for further particulars.

SEPTEMBER 29. — **Woodford Green.** — PRIVATE STREET WORKS.—Woodford U.D.C. invite tenders for kerbing, channelling, and making-up portions of the Broadway and Monkhams-avenue, Woodford Green. Plans, etc., may be seen, and bills of quantities and forms of tender obtained, on application to Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green, upon deposit of 1*l.* 1*s.*

SEPTEMBER 30.—**Clydebank.**—WATER SUPPLY WORKS.—Contract No. 3.—The Clydebank and District Water Trustees invite offers for the opening and refilling of trenches for the laying and jointing of about 5¼ miles of 18 in. diameter cast-iron pipes from a point about 1¼ miles north of the reservoir on Burn Crooks Burn, presently under construction, to a point near Tambowie Distillery; the construction of about 700 yds. of conduit in tunnel, with relative chambers; and the construction of a junction tank and other relative work. Drawings may be seen at the office of the engineers, Messrs. Warren & Stuart, 94, Hope-street, Glasgow, from whom copies of the specification and schedule of quantities may be obtained on deposit of 2*l.* 2*s.*

SEPTEMBER 30. — **Cumnock and Holmhead.** — WATER PIPES, ETC.—Tenders are invited for providing and laying 8-in. cast-iron water pipes, about 2,920 lin. yds., and other relative works. On deposit of 1*l.* 1*s.*, copies of the specification and schedule of quantities may be obtained from the engineer, Mr. Allan Stevenson, 14, Cathcart-street, Ayr.

SEPTEMBER 30. — **Elkesley.** — BOREHOLES AND TEST PUMPING.—Lincoln Corporation invite tenders for putting down four boreholes, conducting test pumping, etc., at Elkesley, Notts, about five miles from Retford Junction. Drawings may be seen, and specification, etc., obtained at the office of the Engineer, Mr. Neil McK. Barron, Saltergate, Lincoln, upon payment of the sum of 5*l.* 5*s.*

SEPTEMBER 30. — **Lincoln.** — TRIAL BOREHOLES.—Elkesley Scheme. Contract No. 2.—The Corporation invite tenders for putting down two trial boreholes at the River Trent, about three miles north of Clifton-on-Trent Station on the Lincolnshire, Derbyshire, and East Coast Railway (G.C.). Drawings may be seen, and specification, etc., obtained, at the office of the Engineer, Mr. Neil McK. Barron, Saltergate, Lincoln, upon payment of the sum of 2*l.* 2*s.*

* SEPTEMBER 30. — **Tooting Graveney.**—ROADS.—The Metropolitan Asylums Board invite tenders for repairing and remaking certain roads at the Grove Fever Hospital, Tooting-grove, Tooting Graveney, S.W. See advertisement in this issue for further particulars.

OCTOBER 5. — **St. Ives.** — WATERWORKS.—The Corporation of St. Ives invite tenders for constructing an impounding reservoir at Bussow Moor; providing and erecting filters and filter-house at Hellesveor; erecting a caretaker's cottage, and providing and laying about two miles of cast-iron mains, varying from 6 in. to 9 in. in diameter, together with valves, etc. The plans, prepared by the engineer, Mr. A. P. I. Cotterell, M.Inst.C.E., 28, Baldwin-street, Bristol, may be seen at his office, where copies of the specification, etc., may be obtained on payment of the sum of 3*l.* 3*s.*

OCTOBER 5.—**Westport, Co. Mayo.**—WATERWORKS.—Westport U.C. invite tenders for the construction of waterworks. The works are divided into four sections. Contractors may tender for any or all of the sections, namely:—(1) To supply about 583 tons of cast-iron pipes, 3 in. to 7 in.; (2) to supply street fountains, valves, hydrants, and town water fittings; (3) to execute the works on site, including excavations, pipe laying, building pumping station, etc.; (4) to supply and erect a turbine water wheel, two triplex pumps, one engine, and suction gas plant about 14 b. h.p. Copies of the specifications and quantities may be had on application to Mr. C. Mulvany, M.Inst.C.E., Athlone, on deposit of 1*l.*

OCTOBER 6. — **Edinburgh.** — WATERWORKS. — The Edinburgh and District Water Trustees invite tenders for the work to be done in constructing a clear-water tank, settling tanks, filter and meter houses, and providing, laying, and jointing cast-iron pipes, with relative works, at Fairmilehead. Plans may be seen, and copies of the specification, etc., obtained, at the offices of the engineer, Mr. W. A. Tait, C.E., 72A, George-street, Edinburgh, and 9, Victoria-street, Westminster, S.W., on payment of 1*l.*

DECEMBER 1. — **Guayaquil (Ecuador).** — DRAINAGE AND PAVING WORKS.—City of Guayaquil Board of Drainage and Water Supply invite tenders for the execution of the drainage and paving works for the whole of the streets of the City of Guayaquil, according to the specification, plans, and conditions existing in the Consulate-General of Ecuador, 120, Bishopsgate-street Within, E.C. All tenders must be made on the forms or cedulas in blank (to be obtained at the Consulate), which the Board has prepared, and which tenders will be opened in the City of Guayaquil on December 1.

NO DATE.—**Heath Town.**—KERBING, ETC.—Heath Town U.D.C. invite tenders for kerbing and channelling about 250 yds. Bushbury-road, York kerbs, 5 and 10, four rows Bentley sets. Also for raising channel about 3-in. 200 yds. or thereabouts in Wolverhampton-road. Quote per yard. Mr. E. Griffiths, Surveyor, Railway-street, Heath Town.

NO DATE.—**Prestwick.**—ROADS.—The T.C. invite tenders for the making of Mansfield-road and

Waterloo-road. For schedule and particulars apply to Mr. William Shaw, Town Clerk, Burgh Chambers, Prestwick.

STONE, MATERIALS, AND STORES.

SEPTEMBER 22.—**Cowes.**—PORTLAND CEMENT.—Cowes U.D.C. invite tenders for the supply of Portland cement. Further particulars and form of tender may be obtained upon application to Mr. John W. Webster, Surveyor and Water Engineer to the Council, High-street, Cowes, I.W.

SEPTEMBER 22.—**Rhondda.**—Rhondda U.D.C. invite tenders for the supply of lead and compo pipe and block tin. Form of tender may be obtained on application to Mr. Octavius Thomas, Engineer and Manager, Gas and Water Offices, Pentre, Rhondda, Glam.

SEPTEMBER 23.—**Dover.**—RHENISH BASALT STONE.—The Guardians invite tenders for the supply of about 500 tons of Rhenish basalt stone, according to specification and form of tender, which can be obtained from Mr. Eugene Carder, Clerk to Guardians, 17, Market-square, Dover, on receipt of a stamped addressed foolscap envelope.

SEPTEMBER 24.—**Deal.**—BROKEN FLINTS.—The Corporation of Deal invite tenders for the supply of field surface picked flints. Conditions and tender forms to be had from Mr. Thos. C. Golder, Borough Surveyor, Borough Surveyor's Office, 23, Queen-street, Deal.

SEPTEMBER 30.—**Kesteven.**—ROAD MATERIALS.—The Kesteven C.C. invite tenders for the supply of granite, slag dust, and gravel for footpaths required for the main roads. Specifications and form of tender may be obtained on application to Mr. W. B. Purser, A.M.Inst.C.E., County Surveyor's Office, Grantham.

* OCTOBER 5.—**London.**—GENERAL STORES.—The Directors of the Metropolitan Railway Company invite tenders for supply of general stores during twelve months, ending October 31, 1909. See advertisement in this issue for further particulars.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*QUANTITY SURVEYOR	St. Marylebone Boro. Council	See advertisement in this issue	Sept. 28
*HEAD MASTER	Liverpool Education Com. ...	See advertisement in this issue	Oct. 2

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDING MATERIALS, KILBURN—On the Premises	Ernest Owers	Sept. 21
*TIMBER, BUILDERS' MATERIALS AND PLUMBERS' STCK., PRESTON—On the Premises	Thos. Dewhurst & Son	Sept. 22
*HORSES FROM GREAT EASTERN RAILWAY—At Aldridge's, St. Martin's-lane	W. & S. Freeman	Sept. 23
*CABINET-MAKER'S STOCK, New Bond-street, W.—On the Premises	Arber, Butter, Waghorn, & Brown	do.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sims	Sept. 30
*FREEHOLD BUILDING PROPERTY, HILLINGDON AND UXBRIDGE—At the Mart	Walton & Lee	Oct. 15
*CONTRACTOR'S PLANT AND MACHINERY, ABBEY WOOD, KENT—Depôt, Crossness ...	Fuller, Horsey, Sons, & Cassell	Oct. 27

MISCELLANOUS—*Continued from page 310.*

BEVIS MARKS AND EARLY LONDON.—Excavations for laying down postal telephone lines in the roadway of Bevis Marks, near Aldgate, have brought to light, at a depth of some 25 ft., many well-preserved pieces of pottery of the Roman and earlier English periods. The narrow-necked and rounded urns range from 20 in. to 30 in. in height.

MARTELLO TOWERS.—The projected sale, at a price of 500*l.* a-piece, of two martello towers near Bexhill, as well as of those in Dublin Bay, recalls the circumstances under which they were erected, when Napoleon's threats of invasion awakened the Government to the unprotected condition of our south-eastern coast. The name is variously derived from the Italian *martello* (Latin, *martellus*), a small hammer, and from the round fort in Martello Bay, Corsica, against which General Dundas's artillery failed in 1794. Perhaps the bay took its name from the fort; many towers after that kind were built in Sicily and Sardinia, *temp.* Charles V., as a security against pirates. General Dundas recommended the construction of similar sea-towers along the low-lying shore of Kent and Sussex, and at the Channel Islands, Queenstown Harbour, and other places. Last January the sea occasioned the downfall of a martello tower at Dymchurch, Romney Marsh; the ruins reveal two narrow galleries in the thickness of the massive drum wall, the gun being mounted on the roof.

THE CIRCUS MAXIMUS, ROME.—At one of the recent meetings of the Academy of Inscriptions and Arts, Paris, a report was read on the work of M. Bigot, former winner of the Grand Prix de Rome. His research work was mainly carried out by the help of grants made by the Academy. The precise limits and details of construction of the great circus were hitherto little known, but M. Bigot has succeeded in finding bases *in situ* by which he has been able to determine the site and curve of the "carceres" (the coach-houses in which the chariots waited). From other discoveries he has established the rise of the stepped seats of the spectators and the dimensions of the arena. M. Bigot draws interesting comparisons with other circuses, especially that of Maxentius, whose plan is somewhat similar though smaller. These researches on the Circus Maximus have been for M. Bigot the starting-point for a much greater work, *i.e.*, a relief plan, to a large scale, giving the position and restoration of all ancient monuments whose traces have been found on the site of Rome. All who have seen the plan, a large part of which is finished, are struck with the lifelike impression it gives of the ancient city; but it requires still to be completed, and the author experiences great difficulty in finding the means to carry on this expensive undertaking. It is hoped that the Academy will see its way to encouraging and seconding M. Bigot's efforts.

Patents of the Week.

APPLICATIONS PUBLISHED.*

11,709 of 1907.—R. A. A. S. PIERCEY: *Obtaining of Helices upon Poles, Piles, Beams, and the like.*

This relates to an apparatus for obtaining helices upon the metallic structures of ferro-concrete, comprising slings for separating the structure in a combination with means for revolving the slings and therefore the structure.

18,938 of 1907.—W. R. HARRIS: *Tanks or Cisterns for Hot-water Circulation Systems or the like.*

This relates to a tank or cistern of a circulation system for hot water or the like, and consists in the arrangement of two or more inlets, or of two or more sets of inlets, the orifice of one inlet, or the orifices of one set of inlets, being provided with a non-return valve, or non-returning valves or the like, and being situated at a lower level than the orifice of the other inlet, or the orifices of the other set of inlets.

22,587A of 1907.—B. R. PHILLIPSON: *Arrangement and Mounting of Boiler Pipes in Kitchen Ranges.*

This relates to the manner in which flow and return pipes are laid. The flow and return pipes of boiler are laid in the usual way, but instead of building them into brickwork, as is common practice, they are placed between the brickwork, which is behind the range at the back of the skirtings; but in ordinary ranges this space is small, not more than about ½ in.; but for the purpose of providing sufficient space for the pipes, a skirting is used with a larger moulding on its upper part than is generally employed, so as to throw forward the space of the skirtings, and by so doing secure a space of about 1¼ in., which is sufficient to receive the pipes, and forms a safe and convenient chamber to hold them.

22,917 of 1907.—J. DOHLE: *Fanlights.*

This relates to a device for adjusting fanlights, specialised by the rack rod engaging through its teeth a toothed wheel, fitted in a casing to the window, the upper part of rack rod through its teeth also engaging the toothed wheel, thereby opening or closing the fanlight turning on its hinges.

25,035 of 1907.—R. A. HUDD: *Chimney and Ventilating Shaft-tops.*

This relates to a revolving down-draught preventing cowl of the type set forth, providing each shell with a series of openings or pockets separated from one another by recesses or channels, the shells being so arranged that the recesses between the openings or pockets of the shell immediately below form channels to direct the wind into the pockets or openings of the shell immediately above.

2,600 of 1908.—J. G. F. LUND: *Straight Vaults or Arches.*

This relates to straight vaults or arches, and consists of the employment of mechanically-stretched iron inlayings, which are arranged at the underside of the vaults, and are surrounded by a monolithically hardened covering of cement mortar, which covering is hardened upon the inlayings after the stretching of the same, and each cover is of such a shape that the side parts of the said covering project into corresponding grooves in those parts of the blocks to which are imparted compressive stresses by the stretching of the iron inlayings.

24,740 of 1907.—J. BROADBENT and J. E. BROADBENT: *Rotary Screens Applicable to Stone and Ore Crushing Machines, and for Screening Gravel and the like.*

This relates to rotary screens for separating different sizes of stone, ore, and the like, the combination of a short inner cylinder as at the receiving end of the cylinder, and of less diameter than the main cylinder, with apertures as at the inner end of said short cylinder and corresponding apertures in the main cylinder.

25,679 of 1907.—W. BUTCHER: *Plugs or Stoppers for Use in the Testing of Drain-pipes and the like.*

This relates to a plug or stopper of the class described, an indiarubber annular piece such as having annular rims formed upon it, a disc mounted to slide upon a central bolt, and another disc made to fit upon said bolt by being screwed thereon, said disc having annular grooves to take over the rims on the annular piece, which is mounted between them, a lock-nut mounted on the said bolt, and a cam-lever for causing the discs to press upon the annular piece; all these several parts being constructed to act together.

437 of 1908.—2. WEITHALER: *Process and Apparatus for the Production of Artificial Stone Slabs and the like.*

This relates to a process for manufacturing terrazzo or artificial stone slabs, which consists in filling a number of moulds formed by a grid or pattern form provided with partitions or division plates and a loose bottom plate, with a suitable material to form the slabs, removing the grid after partial setting of the material, lowering the bottom plate with the slabs resting upon it into a receptacle containing a liquid, quick-setting, binding material, and causing said liquid to rise from below into the spaces between adjacent slabs left vacant by the removal of the grid.

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

24,737 of 1907.—H. ENGLAND: *Construction of Saws for Use in the Sawing or Cutting of Stone or the like.*

This relates to the production of saws or blades of steel or iron for use in the sawing or cutting of stone or the like. The saws or blades are characterised by the usual indentations being so formed that the passages they afford for the abrading substances are not straight and even, but all of an alternating, enlarged, and restricted form, their edges being in the shape of a series of curves. The indentations are also so proportioned that their formation on one side of the blades produces raised parts on the other side thereof, with adjoining indentations on the same side corresponding in shape with those on that side where the indentations are impressed.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

September 7.—By WALLER & KING (at Southampton).

Itchen, Hants.—16 and 18, Manor-rd., u.t. 894 yrs., g.r. 2*l.* 15*s.*, y.r. 33*l.* 12*s.* £425

Woolston, Hants.—West-rd., Sandyford and Carisbrook, u.t. 852 yrs., g.r. 6*l.*, y.r. 42*l.* .. 620

Shirley, Hants.—17, Shirley Park-rd., f., w.r. 16*l.* 8*s.* 198

September 8.—By DRIVERS.

Camden Town.—77, Stibbington-st., u.t. 40 yrs., g.r. 7*l.*, e.r. 38*l.* 245

By FREDERICK WARMAN.

Hornsey Road.—15 and 17, Orpingley-rd., u.t. 69 yrs., g.r. 5*l.*, w.r. 67*l.* 12*s.* 280

By WHITTON & LAING (at Sidmouth).

Southleigh, Devon.—King's Down Estate, 270 acres, f., y.r. 90*l.* 2,675

By DREWEATT & WATSON (at Newbury).

Newbury, Berks.—19, Cheap-st. (s.), f., y.r. 30*l.* 14*s.* 650

September 9.—By DREWEATT & WATSON (at Newbury).

Newbury, Berks.—St. John's-rd., eight plots of freehold building land 1,520

September 10.—By LOCKING, COULSON, & WALKER.

Stoke Newington.—100, High-st. (s.), f., y.r. 125*l.* 2,000

Kingsland.—97, High-st. (s.), u.t. 55 yrs., g.r. 11*l.* 11*s.*, y.r. 90*l.* 900

By E. & H. RUDDOCK.

Shepherd's Bush.—Westville-rd., f.g.r. 200*l.*, reversion in 77 yrs. 4,445

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Best Stocks	1 8 0	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	" delivered
Flettons	1 7 0	" at railway depôt.
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing..	5 0 0	" " "
Best Blue Pressed Staffordshire ...	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	10 7 6	" " "
Headers.....	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers...	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End.....	17 17 6	" " "
Splays, Chamferred, Squints..	15 10 0	" " "
Best Dipped Salt Glazed Stretchers	10 7 6	" " "
Headers.....	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers ..	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End.....	17 17 6	" " "
Splays, Chamferred, Squints..	15 10 0	" " "
Second Quality White and Dipped Salt Glazed	1 5 0	per 1000 less than best.

BRICKS, &c. (*continued*).

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	" "
Best Portland Cement	28 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	11*s.* 6*d.* per yard, delivered.
Stourbridge Fireclay in sacks	27*s.* 0*d.* per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt.....	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf...	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf ...	2 2½	" "
Ancaster in blocks.....	1 10	per ft. cube, delid. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks ...	2 4	" "
Red Corsehill "	3 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "
YORK STONE—*Robin Hood Quality.*	s. d.	
Scappled random blocks.	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.).....	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes).....	0 11½	per ft. cube "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes).....	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r.d.
20×12 " "	13 17 6	" "
20×10 first quality,,	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc.....	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green...	15 17 6	" "
20×12 " " ...	18 7 6	" "
18×10 " " ...	13 5 0	" "
16×8 " " ...	10 5 0	" "
20×10 permanent green	11 13 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles...	42 0	per 1000, at rly depôt
Hip and Valley tiles ...	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles ...	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards) ...	57 6	per 1000 "
Do. Ornamental do.....	60 0	" "
Hip tiles	4	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes).....	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles.....	3 8	" "
Best "Rosemary" brand plain tiles	48 0	per 1000 "
Best Ornamental tiles.....	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles.....	3 8	" "
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 "
Do. pressed.....	47 6	" "
Do. Ornamental do.....	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles.....	3 6	" "
Staffordshire (Hanley) Reds or Brindled tiles.....	42 6	per 1000 "
Hand-made sand-faced.....	45 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6...	0 10 0	less than 7 in. and 8 in.
Deals: seconds.....	1 0 0	less than best.
Battens: seconds.....	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in....	9 0 0	... 10 0 0
3 in. by 4½ in. and 3 in. by 5 in...	8 10 0	... 9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

WOOD (*continued*).

BUILDING WOOD (*continued*)—	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: best middling Dantzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.) ...	3 12 6	... 3 15
Small timber (6 in. to 8 in.).....	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0
JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.....	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.....	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.....	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.....	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens.....	11 0 0	... 12 0 0
Second white deals, 3in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals.....	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube..	0 3 6	... 0 5 0
Dantzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	... 0 3 9
Small " "	0 2 6	... 0 2 6
Wainscot Oak Logs, per ft. cube..	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch...	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube.....	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 13 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white " "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns.....	7 10 0	... 8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars" ...	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" " Galvanised	17 0 0	... —
(*And upwards, according to size and gauge.)		
Sheet Iron Black— Ordinary sizes to 20 g.	9 15 0	... —
" " 24 g.	10 15 0	... —
" " 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
" " 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 0 0	... —
" " 22 g. and 24 g.	18 10 0	... —
" " 26 g.	20 0 0	... —
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
" " 22 g. and 24 g.	14 15 0	... —
" " 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 8 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
" " " 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0
(Under 3 in., usual trade extras.)		

LEAD, &c.	Per ton, in London. £	s.	d.	£	s.	d.
Lead—Sheet, English, 3lb. and up	16	10	0	...	—	
Pipe in coils	17	2	6	...	—	
Soil pipe	19	12	6	...	—	
Compo pipe	20	12	6	...	—	
Zinc—Sheet—						
Vieille Montagne ...ton	27	5	0	...	—	
Silesian	27	0	0	...	—	
Copper—						
Strong Sheet...per lb.	0	1	0	...	—	
Thin "	0	1	1	...	—	
Copper nails "	0	0	10	...	—	
Copper wire "	0	0	10	...	—	
Brass—						
Strong Sheet "	0	0	11	...	—	
Thin "	0	1	0	...	—	
Tin—English Ingots "	0	1	4½	...	—	
Solder—Plumbers' "	0	0	7	...	—	
Tinmen's "	0	0	9½	...	—	
Blowpipe "	0	0	11½	...	—	

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.	
15 oz. thirds	2½d. per ft. delivered.
" fourths	1¾d. " "
21 oz. thirds	3d. " "
" fourths	2¾d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4¾d. " "
" fourths	4¼d. " "
Fluted Sheet, 15 oz.	3¼d. " "
" 21 oz.	4¼d. " "

ENGLISH BOLLED PLATE IN CRATES OF STOCK SIZES.	
¼ Hartley's	2¼d. per ft. delivered.
¼ "	2¾d. " "
¼ "	2¾d. " "
Figured, Oxford Rolled, and "Oceanic" Glass, white	3¾d. " "
" " tinted	5¼d. " "
Other Glass—	
"Arctic" Glass, white	4d. " "
" " tinted	5¼d. " "
" " ruby and opalescents	1s. " "

OILS, &c.		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	0
" " in barrels	"	0	2	1
" " in drums	"	0	2	3
Boiled " in pipes	"	0	2	2
" " in barrels	"	0	2	3
" " in drums	"	0	2	5
Turpentine in barrels	"	0	2	5
" in drums	"	0	2	8
Genuine Ground English White Lead	per ton	21	0	0
Red Lead, Dry	"	20	0	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	19	6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us not *later than* 10 *a.m. on Thursday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcement of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ALDERSHOT.—For making-up Alfred-road, High-street, for the Urban District Council. Mr. Fred. C. Uren, B.A., surveyor:—

Wheeler & Co.	£129 18 3	Ripley, Strong, & Co.	£102 0 0
Martin, Wells, & Co.	115 0 0	W. Norris, Hale*	88 14 3

AVEBURY, Wilts.—For new dwelling-house, for Mr. George Brown. Mr. Harold Brakspear, F.S.A., architect, Corsham:—

Chancellor & Sons	£2,690
R. Rudman, Chippenham*	2,570

BALLINSPITTLE.—For water supply works, for Kinsale Rural District Council. Mr. Richard Evans, C.E., 53, South-mall, Cork:—

R. Buttimore & Sons	£360 0 0
C. McCarthy	327 10 0
D. Collins	287 10 0
J. Buckley, Bandon*	285 0 0

BOXMOOR.—For the erection of a house for Mr. H. Smith, M.A. Mr. Albert Bullock, A.R.I.B.A., 43, Chancery-lane, W.C.:—

Willmott & Son	£2,944	Wright	£2,197
Darvell & Sons	2,780	Clark Bros., Watford†	2,136
R. Brown	2,426		
Robertson	2,283		

BRENTWOOD.—For painting work at Highwood School, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

J. Waddington	£569 0 0	A. E. Hubbard	£259 10 0
McCormick & Sons	464 0 0	Squire & Farrant	252 12 5
Woollaston Bros.	329 0 0	J. C. Kemp	246 10 0
Vigor & Co.	298 0 0	F. W. Burtwell	245 0 0
J. Johnson	295 0 0	F. W. Jarvis, Ongar-road, Brentwood, Essex*	245 0 0
Brown, Runham Bros.	295 0 0	E. Proctor & Sons	180 0 0
S. T. Wright	286 0 0		
Atheys	273 0 0		

CARLISLE.—For erection of Turkish Baths in James-street, for the Corporation. Mr. H. C. Marks, M.Inst.C.E., City Engineer and Surveyor, 36, Fisher-street, Carlisle:—

A. & T. H. Anderson	£2,564	J. & R. Bell	£2,385
E. Musgrove	2,538	J. Logan	2,368
W. Martin	2,532	J. Laing & Son	2,357
R. M. Ormerod & Sons	2,521	J. Bell	2,357
J. Baty & Sons	2,493	E. J. Hill	2,350
J. H. Reed & Co.	2,407	W. Johnstone, Carlisle*	2,289

[Engineer's estimate, £2,500.]

CARSHALTON (Surrey).—For joinery fittings at the Southern Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell & Martin, architects, 29a, Charing Cross-road, W.C.:—

I. Ward & Son	£2,750 0 0
Holland & Sons‡	2,370 2 5
Summerscales	2,350 0 0
J. & C. Bowyer, Ltd.	2,125 0 0
F. G. Minter	1,952 0 0
Stephens, Bastow, & Co., Ltd.	1,932 0 0
F. W. Honour	1,926 3 6
F. W. Boorman	1,916 14 0
J. Longley & Co.	1,880 0 0
Treasure & Son	1,879 0 0
Rowe & Co., Ltd.	1,860 0 0
Perry & Co.	1,859 0 0
W. King & Son	1,824 0 0
Elliott's Moulding and Joinery Co., Ltd.	1,814 6 2
J. P. White	1,797 0 0
Carter & Wright	1,792 15 2
Lole & Co.	1,784 10 0
Kirk & Randall	1,740 0 0
W. H. Lascelles & Co.	1,728 0 0
H. King & Son	1,684 0 0
J. Willmott & Sons	1,669 13 11
F. & H. F. Higgs	1,535 0 0
G. E. Wallis & Sons, Ltd.	1,477 0 0
J. Garvie & Sons, 301, Oxford-street, W., and 55, Rose-street, Aberdeen*	1,348 0 0

‡ Subsequently amended by letter to £2,357 13s. 8d.

CLEDFORD.—For new branch and cottage at Cledford, Middlewich, for the Winsford Industrial Co-operative Society, Ltd.:—

Dolan & Son	£1,470 0 0	Birchall Bros., Darlington-street, Middlewich*	£1,200 0 0
J. Smallwood	1,388 0 0	Dickenson & Noden	1,015 10 0
J. Wilson	1,350 0 0		

CYMMER.—For alterations and improvements, Workmen's Hall, for the Committee. Mr. W. P. Jones, architect, Cymmer. Quantities by architect:—

J. Evans	£236 7 5	D. Lloyd, Builder, Cymmer*	£215 0 0
Harris & Jones	225 7 0		

DUDLEY.—For erecting new classrooms at Grammar School, for the Governors. Mr. Thomas Grazebrook, architect, Stourbridge:—

Dallow & Sons	£2,750 0	W. Deeley	£2,490 0
Harris & Son	2,740 0	Oakley & Coulson	2,487 15
M. Round & Sons	2,508 0	A. H. Guest, Stourbridge‡	2,479 0
J. Guest & Son	2,550 0		
H. Dorse & Son	2,525 0		

‡ Accepted subject to approval of Board of Education.

EAST WESTMORLAND.—For Broughwater supply works, for the Rural District Council. Messrs. G. Watson & Son, engineers, St. Andrew's-chamber, Penrith:—

W. Grisenthwaite	£1,857 8 8
Nunn & Co.	1,768 3 5
D. Thompson & Son	1,715 17 8
J. Jackson	1,639 10 2
F. Mitchell & Son	1,633 4 6
W. Carradice	1,605 5 8
G. Carruthers	1,490 1 9
J. & W. Scott	1,447 0 0
J. G. Reynoldson, Westmoreland*	1,329 2 8

GODREAMAN.—For new boys' school, outbuildings, laundry, cooking kitchen, workshop, etc., for the Aberdare Urban District Council Education Committee. Mr. T. Roderick, architect, Clifton-street, Aberdare. Quantities by architect:—

J. Morgan & Son, Ltd., Aberdare*	£9,387

GRAYS.—For electric storage battery, booster, switchboard, etc., at the training-ship Exmouth, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

S. Newton & Co.	£715 0 0
R. Pope, Ltd.	555 0 0
Hart Accumulator Co., Ltd.	520 17 0
C. Pullan	499 0 0
Electrical Power Storage Co., Ltd.	487 0 0
Siemens Bros.' Dynamo Works, Ltd.	485 0 0
Chloride Electrical Storage Co., Ltd.	450 0 0
Premier Accumulator Co., Ltd.	415 0 0
Crompton & Co., Ltd.	415 0 0
W. Harvie & Co., Ltd.	410 0 0
Electric Construction Co., Ltd.	409 0 0
D.P. Battery Co., Ltd.	406 0 0
Pritchetts & Gold, Ltd.	382 0 0
Millwall Electric Co.	375 4 0
Dargue, Griffiths, & Co., Ltd.	365 0 0
Edmundson's Electricity Corporation, Ltd.	354 0 0
Whipp & Bourne	352 0 0
Nursey & Marr	345 0 0
Watford Engineering Works	327 0 0
Cox-Walkers, Ltd.	325 0 0
Union Electric Co., Ltd.	312 5 0
G. E. Taylor & Co.	310 13 3
Pinching & Walton	307 0 0
General Electric Co., Ltd.	304 0 0
Johnson & Phillips, Ltd., Victoria Works, Charlton, Kent*	302 0 0

KIDSGROVE.—For sinking and crutting at New Well at Mow Cop, for the Urban District Council. Mr. F. C. Crimes, Engineer and Surveyor, Kidsgrove, Staffs:—

	For sinking well. Per yard.			Driving crut. Per yard.		
W. Crossland	£10	0	0	£7	5	0
T. S. C. Harden	10	0	0	—		
S. Turner	12	10	0	10	10	6
J. Langwin	18	0	0	9	0	0
E. Timmins & Sons	30	0	0	18	0	0
J. Thorley	12	0	0	8	10	0
W. Cooke & Co.	35	0	0	23	10	0
F. Smith & Sons, Grimsby*	6	10	0	6	5	0

For the whole work.

J. Pennington	£1,140
W. Rollington & Sons	1,190

LEATHERHEAD.—For making-up, etc., of Belmont-road, for the Urban District Council. Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead:—

Belmont-road.—Part 1.

W. Wilson	£419 12 5	E. Parry & Co.	£305 9 0
E. & E. Iles	409 12 0	Bate & Co.	299 3 9
J.P. Wilson & Co.	405 0 0	Streeter & Co.	294 15 10
Trueman & Co.	393 0 0	J. May	288 15 9
W. H. Wheeler & Co.	328 19 9	R. W. Swaker	277 0 0
J. Mowlem & Co.	317 0 0	H. M. Blaker, Leatherhead*	246 7 6

[Surveyor's estimate, £308 8s. 9d.]

Part 2.

J. Mowlem & Co.	£53 0 0	Streeter & Co., Shalford, Guildford*	£35 0 0
E. & E. Iles	49 11 6	W. Wilson	34 9 9
E. Parry & Co.	41 15 0	H. M. Blaker	33 2 0
J.P. Wilson & Co.	40 0 0	Trueman & Co.	32 0 0
W. H. Wheeler & Co.	39 15 0	Bate & Co.	29 13 9
J. May	35 7 0	R. W. Swaker	23 10 0

[Surveyor's estimate, £38 0s. 9d.]

LLANTRISANT.—For providing and laying about 268 lin. yds. of 9 in. diameter stoneware pipes at Cowbridge-road, for Llantrisant and Llantwit Fardre Rural District Council. Mr. Gower S. Morgan, Surveyor, School-street, Pontyclun:—

H. Ringham	£156 10 6	J. Lloyd	£132 11 10
H. Murray	147 0 0	W. Watkins	125 10 4
J. Sutherland	146 15 8	R. Rankin	116 19 0
T. Scott	143 7 6	John & West	116 1 6
Barnes, Chaplin, & Co.	139 3 3	T. Dyer	115 10 8
G. Morgan	137 16 10	W. John, Llantrisant*	108 16 9

LONDON.—For erecting a wall and for other work, Peckham Rye, S.E., for the Metropolitan Asylums Board. Messrs. T. W. Aldwinckle & Son, architects, 20, Denman-street, London Bridge, S.E.:—

Brown, Runham Bros.	£450	W. J. Mitchell & Son	£287
Watson & Ellwood	366	W. V. Goad	287
J. Dorling & Sons	344	J. Quittenton	274
W. F. Blay, Ltd.	323	J. Johnson	263
H. Hann	321	J. & C. Bowyer, Ltd.	263
Johnson & Co.	317	H. King & Son, 22, Commercial-road, Peckham*	249
W. Reason	299		
W. Durrant & Son	298		
W. J. Coleman & Co.	295		

MILTON REGIS.—For erecting of a stores in Gas-road, for the Urban District Council. Mr. W. R. Warton, Surveyor, Town Hall, Milton Regis:—

H. Gardler, Crown-road, Milton Regis £267

[Lowest tender.]

MILTON REGIS (Kent).—For enlargement of Council school, Upton-lane, for Kent Education Committee. Mr. Wilfrid H. Robinson, Architect:—

		Amount of Credits.	
Treasure Bros.	£3,209 0	£30	0
Johnson & Co.	2,975 0	60	0
Spencer, Santo, & Co.	2,908 0	21	10
Jones & Andrews	2,899 0	8	0
Abbott & Charlton	2,879 0	11	15
J. Wilford	2,820 0	40	0
C. Skinner	2,810 0	67	0
West Bros.	2,739 0	27	0
C. B. Benfield	2,737 0	47	0
Pavey & Sons	2,688 0	33	0
Sturry Building Co.	2,627 0	87	10
Amos & Foad	2,625 0	45	0
L. Seager	2,613 0	50	0
H. J. Tidy	2,604 0	65	0
Bowes Bros.	2,599 10	54	0
T. Monk	2,572 0	85	0
Bishop & Sons, Sittingbourne‡	2,505 0	42	0

‡ Recommended for acceptance.

NEWHILLS.—For erecting science room at Bucksburn Public School, for Newhills School Board. Messrs. Kelly & Nicol, architects, 367, Union-street, Aberdeen:—

Mason: G. Ogg & Son, Bankhead	£422 9 6
Carpenter: Stephen & Murray, Bucksburn	
Plumber: J. Garrow, Bucksburn	
Plasterer: Sellar & Co., Aberdeen	
Slater: R. Yeats, Bucksburn	

PENRHIWFER and TONYREFAIL.—For providing and laying about 134 lin. yds. of 9 in. diameter stoneware pipes, for the Llantrisant and Llantwit Fardre Rural District Council. Mr. Gower S. Morgan, Surveyor, School-street, Pontyclun:—

G. Morgan	£190 18 2	J. Lloyd	£172 10 0
H. Ringham	197 4 2	John & West	156 18 0
H. Murray	181 8 0	W. Watkins	156 5 0
Barnes, Chaplin, & Co.	172 16 3	R. Rankin, Cardiff*	152 6 1

PONTYCLUN.—For providing and laying about 760 lin. yds. of stoneware and 38 lin. yds. of cast-iron pipes 9 in. in diameter, and 129 yds. of 6 in. diameter stoneware pipes at Lanelay-road, for Llantrisant and Llantwit Fardre Rural District Council. Mr. Gower S. Morgan, Surveyor, School-street, Pontyclun:—

H. Ringham	£516 8 11	J. Lloyd	£419 14 4
H. Murray	482 18 2	R. Rankin	410 3 11
J. Sutherland	479 9 1	John & West	365 5 9
T. Scott	477 19 7	W. Watkins, Dinas Powis*	356 6 4
G. Morgan	439 7 11		
Barnes, Chaplin, & Co.	437 14 2		

PORT GLASGOW.—For recausewaying Robert-street and paving portion of the footpath:—
A. A. R. Long, Gourock (Schedule prices.)

PORTSMOUTH.—For reconstructing, etc., roofs to the four vestries at the mortuary chapels at the Portsea Cemetery. Mr. Philip Murch, Borough Engineer, Town Hall, Portsmouth:—

C. G. Learmouth	£116 10
J. Tanner, Castle-road, Southsea*	80 0

ROCHFORD.—For building work at the Workhouse, for the Guardians:—

S. Norden, Rochford	£123 0 0

ROTHERHAM.—For alterations and extensions at the Grammar School, for the Governors. Mr. J. E. Knight, architect, College-street, Rotherham:—

W. H. Treherne	£6,700 0 0
Chadwick & Co.	6,524 0 0
T. Roper & Sons	6,242 0 0
Nicholson & Son	6,012 10 3
Gill & Son	5,777 0 0
W. M. Beeden	5,569 4 5
R. Snell	5,556 0 0
Fidler & Co., Sheffield*	5,120 0 0

SEATON DELAVAL.—For 600 lineal yds. of sewer at Avenue Head, for the Tynemouth Rural District Council. Mr. A. S. Dinning, Surveyor, 21, Ellison-place, Newcastle-on-Tyne:—
Coxon & Son, Holywell, Northumberland .. £314 7

SHEERNESS-ON-SEA.—For the erection of Masonic Hall upon site at corner of High-street and St. George's-road, Sheerness, for the Trustees. Mr. Ernest J. Hammond, C.E., M.S.A., Gillingham, Kent. Quantities by the architect:—

S. Wills & Sons	£2,331 17 6
S. Curd	2,250 14 10
Thomas & Edge	2,193 0 0
C. Wilson	2,117 0 0
A. G. Webb	2,099 0 0
Johnson & Co.	2,040 0 0
Sturry Building Co.	2,025 0 0
Barden & Head	1,997 10 0
A. E. Tong	1,997 0 0
C. E. Skinner	1,955 0 0
H. E. Phillips	1,940 0 0
Amos & Ford	1,880 0 0
L. Seager	1,866 0 0
G. Gates & Sons	1,850 0 0
West Bros., Rochester*	1,789 0 0
J. Bligh	1,773 0 0

STAPLEAS (I. of W.)—For providing and laying 1,817 yds. of 9-in. sewer, manholes, etc., and 672 yds. 3-in. c.i. water main, for the Isle of Wight Rural District Council. Mr. H. B. Cullin, Council's Surveyor, Brooklands, Wootton. Quantities by Surveyor:—

Sewer.

G. H. Arthur	£1,132	Burgess & Son	£937
P. A. Williams	1,084	G. Quinton, Newport*	879
F. A. Mew	985	C. H. Wells	875
R. Coulorey	982		
W. F. Williams	930		

[Surveyor's estimate, £1,035.]

Water Main.

G. Quinton	£154 0 0	Thompson	£137 10 0
G. H. Arthur, Newport*	146 4 10		

[Surveyor's estimate, £165.]

STOKE NEWINGTON.—For adapting 36 and 38, Milton-road, to public slipper baths, for the Borough Council. Mr. W. F. Loveday, Borough Surveyor, Town Hall, Milton-road, N.:—
W. Shurmur & Sons, Riverside Works, Upper Clapton, N.E.* £600 4 6

STOKE NEWINGTON.—For supply and erection of a steam disinfector at the disinfecting station now being built for the Borough Council:—
Goddard, Massey, & Co., Ltd.* £215 11 5

STROOD.—For painting, etc., at the Union Workhouse, for the Guardians. Mr. G. E. Bond, architect, 384, High-street, Rochester:—

J. B. Lingham	£191 0 0	T. C. Bines	£98 0 0
A. G. Hughes	148 17 6	Swain & Stanley, Gillingham*	97 0 0
M. Batchelor	136 10 0		
J. S. Hitch	133 0 0		

SWANSEA.—For paving and tramway works, for the Corporation. Mr. G. Bell, Borough Surveyor, 13, Somerset-place, Swansea:—

Hughes & Stirling	£10,581 11 6
G. Law	9,999 0 0
Acme Flooring and Paving, Ltd.	9,990 0 0
W. Muirhead & Co.	9,641 11 6
Dick, Kerr, & Co., Ltd.	8,805 3 2
T. L. Scott & Co., Ltd.	8,606 9 5
Krauss & Son	7,898 8 9
W. Griffiths & Co., Ltd., Bishopsgate-street, London‡	7,402 2 5

‡ Recommended for acceptance.

SYDBROOK.—For the erection of school, for the Gloucestershire County School. Messrs. Medland & Pryer, architects, 15, Clarence-street, Gloucester. Quantities by Mr. E. A. Pryer, Clarence-street:—

Mackie & Co.	£4,654 0 0	W. Jones	£3,735 0 0
Beech & Co.	4,531 0 0	E. J. Flewelling	3,735 0 0
A. J. Colborne	4,059 0 0	H. Ash	3,710 0 0
J. Long & Sons	3,993 0 0	A. S. Cooke	3,691 0 0
Estcourt & Sons	3,989 0 0	Dimery & Sons	3,656 0 0
Bowers & Co.	3,856 0 0	Wilks & Sons	3,648 0 0
W. T. Nicholls	3,737 0 0	Crane, Ltd., Nottingham*	3,430 19 5

TEWKESBURY.—For building a coal store, blacksmith's shop, etc., at the waterworks pumping-station, for the Cheltenham Town Council. Mr. J. S. Pickering, Water Engineer, Municipal Offices, Cheltenham:—

W. Cresswell	£583 5 4	Collins & Godfrey, Tewkesbury*	£498 0 4

TIPTON.—For extension of public offices, Owen-street, for the Urban District Council. Mr. W. H. Jukes, Engineer and Surveyor, Public Offices, Tipton:—

H. Smith & Son	£1,189 0	J. Edwards	£948 15
Oakley & Coulson	1,130 0	H. Smarth	875 0
H. Dorse & Co.	1,060 0	W. A. Kendrick, Tipton*	875 0
W. Castles & Son	1,030 0		
J. Sisman	985 0		

[Surveyor's estimate, £1,015 1s.]

WEYMOUTH.—For works at Isolation Hospital at Cold Harbour-lane, Radipole, for the Rural District Council. Mr. G. A. Andrews, A.S.I., architect and surveyor, Broadway, Dorset:—

J. T. Whettam	£340 0	J. A. Parsons	£165 14
Stone & King	198 0	A. Knell & Sons	143 0
W. H. Rashley	179 0	Bird & Cox, Hollyroad, Westham, Weymouth*	150 10
C. Bamton	174 5		
C. Legg	169 15		
Pates Bros.	166 12		

WINSFORD.—For erecting a shop in Ways Green, for the Industrial Co-operative Society, Ltd. Mr. Thomas Dutton, architect, Ways Green, Winsford:—

Sergeant Bros.	£1,045 0	Dickenson & Noden	£932 0
J. Fowles & Son	1,015 0	J. Wilson, Ways Green, Winsford*	838 10
E. Curzon	1,007 10		
A. Court	965 0		
Birchall Bros.	958 0		

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